

2003-2004 College Catalog

- General Information
- Admission and Registration
- GRCC Curricula
- Course Descriptions
- Job Training
- Faculty and Staff

www.grcc.edu

IMPORTANT INFORMATION SOURCES

e-GRCC is Grand Rapids Community College's online system of doing business. Administered through our Web site, e-GRCC makes it possible for you to complete many functions that would otherwise be handled in person, over the phone, or by mail. Currently, you can

add and drop classes and view your class schedule, unofficial transcript, course and grade history, financial account information and financial aid award information. To use e-GRCC, go to our Web site at www.grcc.edu and look for the icon on our home page.

GRCC Information (616) 234-4000

Fax (616) 234-4005 www.grcc.edu

Bookstore

Textbook information—new and used, GRCC clothing
122 Lyon Street NE (616) 234-3880

Admissions

Admission Information, International Students,
105 Main Building (616) 234-4100

Business & Technical Training

Provides workforce training and services
151 Fountain Street NE (616) 234-3600

Campus Police

Protection of persons and property, crime prevention and reporting, lost and found
418 Main Building (616) 234-4010

Career Resources and Testing Center

Career Library, Career and Achievement Tests, Telecourse Testing, CLEP
336 Student Center (616) 234-3890

Cashier's Office

Tuition payments
154 Main Building (616) 234-4020

Departments

Accounting and Office Administration

204 North Bldg. (616) 234-4220

Applied Technology

212 ATC (616) 234-3670

Behavioral Sciences

418 North Bldg. (616) 234-4283

Biological Sciences

317 Science Bldg. (616) 234-4248

Child Development

300 Main Bldg. (616) 234-4349

Criminal Justice

266 Main Bldg. (616) 234-4280

Computer Applications

212 ATC (616) 234-3670

Dental Programs

500 College Park Plaza (616) 234-4349

Drafting and Design

212 ATC (616) 234-3670

English

502 North Bldg. (616) 234-4243

Fashions and Interiors

204 North Bldg. (616) 234-4220

General Business

204 North Bldg. (616) 234-4220

Hospitality

117 ATC (616) 234-3690

Language and Thought

321 Main Bldg. (616) 234-3544

Manufacturing

212 ATC (616) 234-3670

Counseling Center

Professional, academic and career counseling
327 Student Center (616) 234-4130

Financial Aid

Scholarships, loans, workstudy program
156 Main Building (616) 234-4030

Job Placement

Job listings, placement interview, on-campus employment, 103
Main Building (616) 234-4170

Library

Print and electronic resources, computer lab, 62,000
reference and circulating books
Learning Resource Center I (616) 234-3870

Registrar

Registration information, records and transcripts, Veterans'
Program, graduation audits
148 Main Building (616) 234-4120

Student Activities Office

Serve and connect with students—provide educational
diversity, leadership and student programming
26 Student Center (616) 234-4120

Mathematics

218 College Park Plaza (616) 234-4253

Nursing Programs

601 College Park Plaza (616) 234-4238

Occupational Therapy Assistant Program

502 College Park Plaza (616) 234-4349

Performing Arts

100 Music Center (616) 234-3940

Physical Science

317 Science Bldg. (616) 234-4248

Radiologic Technology

502 College Park Plaza (616) 234-4349

Social Science

418 North Bldg. (616) 234-4283

Visual Arts

321 Main Bldg (616) 234-3544

Wellness

Ford Fieldhouse (616) 234-3994

Workbased Learning

212 ATC (616) 234-3660

Academic Deans Office

118 Main Building
School of Arts and Science (616) 234-3673
School of Workforce Development (616) 234-3744
Instructional Design and Learning Technologies (616) 234-4226

Dean of Student Affairs

Provides coordination of student service programs and
serves as an advocate for students and their academic
and non-academic concerns
Student Center (616) 234-3925

GRAND RAPIDS COMMUNITY COLLEGE

2003-2004 CATALOG



BOARD OF TRUSTEES

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 Vice Chairperson, 2005
 Secretary, 2003
 Treasurer, 2003
 Trustee, 2005
 Trustee, 2007
 Trustee, 2007
 President of the College

EQUAL OPPORTUNITY AND NON-DISCRIMINATION

Grand Rapids Community College is an equal opportunity institution and does not discriminate on the basis of gender, race, color, national origin, religion, height, weight, age, marital status, disability, sexual orientation, status as a disabled veteran or Vietnam Era veteran, and/or any other legally protected class not heretofore mentioned, in any of its educational programs and activities, including admissions and employment.

The above measures, in conjunction with other related state laws and the College's policies and procedures, will assure all individuals opportunity for consideration or redress of complaints of illegal discrimination. Affirmative Action, Equal Employment Opportunity, and Americans with Disabilities Act information may be obtained from the Director of Human Resources/Labor Relations & EEO, 404B CPP, 143 Bostwick Avenue NE, Grand Rapids, Michigan 49503-3295. Telephone (616) 234-3972.

143 Bostwick Avenue NE • Grand Rapids, Michigan 49503-3295
 (616) 234-4000 / FAX (616) 234-4005
www.grcc.edu

PRESIDENT'S LETTER 2003-2004



Juan R. Olivarez, Ph.D.

Welcome GRCC Students!

GRCC offers you a choice of paths to follow in reaching your goals. **Liberal Arts** is where we began our 89-year history of academic excellence. **Workforce Development** allows you to develop college-level technological skills that will be the currency of the 21st century. Whichever path you follow, **you have options** for earning a degree, attaining a new level of certification, or building knowledge and skills at your own pace.

That's what is so unique about a community college: **We offer what you need.** We pay attention to the needs of the community's changing business scene, we partner with other organizations to build a brighter future, and we see that higher education is available to **all people** who seek it in our community.

Our **reputation for respected faculty** and our **history of excellence** have helped us create **transfer agreements** with four-year colleges and universities across Michigan and beyond. As of this year, we have a new partnership with Ferris State University that offers you a new alternative for earning a teaching degree, as well as established **3+1 agreements** with Ferris State, Davenport, and Central Michigan universities. All of these let you extend the time you spend on our campus, which can result in significant savings, on your way to a four-year degree. We have **concurrent enrollment agreements** with Grand Valley State University and Ferris State University that allow you to take courses at either institution's campus—offering more scheduling and financial options for you.

We have been working hard to be ready to serve you, **completing a \$6 million renovation of our historic Main Building, opening the Thompson Michigan Technical Education Center (M-TECSM) in Ottawa County and the Tassel M-TECSM in Grand Rapids.** M-TECsSM exist to deliver training programs for high-wage, high-skill, high-demand occupations in order to increase the numbers of Michigan skilled workers in these fields.

As your community's college, we are resolved to help create a bright future for individuals, families, and our whole community. Again, **welcome to GRCC.** Enjoy the wonderful opportunities that our diverse population, talented faculty, and quality educational programs offer you.

Sincerely,

Juan R. Olivarez, Ph.D.
President



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GRAND RAPIDS COMMUNITY COLLEGE

STUDENT CALENDAR 2003-2004

FALL SEMESTER 2003

Monday, September 1 Holiday (All buildings are closed.)
 Tuesday, September 2 Day and Night Classes Begin
 Friday, September 5 Weekend Classes Begin
 Monday, October 20 End of the First 7 Weeks
 Tuesday, November 4 Advising Day (Lab classes are also conducted.)
 Wednesday, November 26 College Meeting and
 Faculty Instructional/Professional Development—
 NO EVENING CLASSES
 Thursday-Friday, November 27-28 Holiday (All buildings are closed.)
 Friday, December 12 Day Classes End
 Monday-Thursday, December 15-18 Day Exams

WINTER SEMESTER 2004

Thursday, January 8 Day and Night Classes Begin
 Friday, January 9 Weekend Classes Begin
 Wednesday, February 25 End of the First 7 Weeks
 Monday-Sunday, March 1-7 Break (Weekend classes meet February 28-29.)
 Thursday, April 8 Advising Day (Lab classes are also conducted.)
 Friday-Sunday, April 9-11 Holiday (All buildings are closed.)
 Friday, April 23 Day Classes End
 Monday-Thursday, April 26-29 Day Exams
 Friday, April 30 Commencement

SUMMER SESSION 2004

Monday, May 3 Day and Night Classes Begin
 Monday, May 31 Holiday (All buildings are closed.)
 Monday, June 21 End of the First 7 Weeks
 Tuesday, June 22 Beginning of the Second 7 Weeks
 Monday, July 5 Holiday (All buildings are closed.)
 Tuesday, August 3 Last Tuesday Day/Night Classes*
 (for 7-week classes)
 Wednesday, August 4 Last Wednesday Day/Night Classes*
 (for 7-week classes)
 Thursday, August 5 Last Thursday Day/Night Classes*
 (for 7-week classes)
 Friday, August 6 Last Friday Day Classes (for 7-week classes)
 Tuesday, August 10 Last Tuesday Day/Night Classes
 (for 15-week classes)
 Tuesday-Wednesday, August 10-11 Exam Days (Faculty Member's Option)
 Wednesday, August 11 Last Wednesday Day/Night Classes*
 (for 15-week classes)
 Thursday, August 12 Last Thursday Night Classes (for 15-week classes)
 Monday, August 16 Last Monday Day/Night Classes*
 (for 7-week classes)
 Monday, August 23 Last Monday Night Classes (for 15-week classes)

* All night classes meeting two nights will meet on the last possible scheduled night.

GRAND RAPIDS COMMUNITY COLLEGE ACCREDITATIONS AND MEMBERSHIPS

Grand Rapids Community College is accredited by the Commission on Institutions of Higher Education of the North Central Association of Colleges and Schools.

ACCREDITATIONS

Associate Degree Nursing Program	Approved by the Michigan Board of Nursing. Accredited by the NLNAC, 61 Broadway, New York, NY 10006; (212) 363-5555.
Corrections	Approved by Michigan Correctional Officers Training Council.
Culinary Arts	Accredited by the American Culinary Federation Accrediting Commission.
Dental Assisting and Dental Hygiene Programs	Accredited by the Commission on Dental Accreditation of the American Dental Association and Approved by the Michigan Board of Dentistry.
Law Enforcement	Approved by Michigan Law Enforcement Officers Training Council.
Music Department	Accredited by the National Association of Schools of Music.
Occupational Therapy Assistant	Accredited by the American Occupational Therapy Association, Inc.
Practical Nursing Program	Approved by the Michigan Board of Nursing. Accredited by the NLNAC, 61 Broadway, New York, NY 10006; (212) 363-5555.
Preschool	Accredited by National Academy of Early Childhood Programs and The National Association for the Education of Young Children.
Radiologic Technology	Accredited by the Joint Committee on Education in Radiologic Technology.

MEMBERSHIPS

- American Association of Collegiate Registrars and Admissions Officers
- American Association of Community Colleges
- American Culinary Federation
- Associate Degree Council, National League for Nursing
- Association for Gerontology in Higher Education
- College and University Systems Exchange
- Council on Hotel, Restaurant and Institutional Education
- International Consortium of Hospitality and Tourism Institutes
- International Tasters Guild
- Michigan Association of Colleges and Universities
- Michigan Association of Collegiate Registrars and Admissions Officers
- Michigan Association of Foreign Students Affairs
- Michigan Community College Admissions Directors
- Michigan Community College Association
- Michigan Community College Biologists
- Michigan Community College Community Service Association
- Michigan Occupational Deans Administrative Council
- Michigan Student Personnel Guidance Association
- Midwest Institute - International Studies and Foreign Languages
- NAFSA: Association of International Educators
- National Restaurant Association
- National Tooling & Machining Association
- North Central Association of Foreign Student Affairs
- North Central Association of Colleges and Schools
- Practical Nursing Council, National League for Nursing
- Retail Bakers Association
- West Michigan Tourist Association

HISTORY OF GRAND RAPIDS COMMUNITY COLLEGE

Grand Rapids Junior College (GRJC) was founded in 1914 by the Grand Rapids Board of Education after a resolution was passed by the University of Michigan's faculty which encouraged the establishment of junior colleges in Michigan. In the '50s and '60s, language in the constitution and legislative acts further clarified the role of community colleges in Michigan. This, along with current needs of the community served, provides the College with direction and purpose.

The College was first located in the Grand Rapids Central High School building. Eight faculty members taught rhetoric and composition, mathematics, history, biology, physics, Latin, and German. The first graduating class numbered 49 students. By 1945, enrollment had grown to 1,200 students, who represented 53 Michigan communities, five states, a territory, and one foreign nation. During the 1950s, the College's enrollment grew an astounding 200 percent.

Under the 1966 Community College Act, the state of Michigan included postsecondary vocational-technical education in the definition of the community college program. As a result, Grand Rapids Community College (GRCC) now offers more than 45 occupational curricula.

In 1991, citizens of the Kent Intermediate School District (KISD) voted to redistrict GRJC, which became Grand Rapids Community College. For the first time in the College's history, it had its own Board of Trustees and its boundaries were extended beyond the Grand Rapids Public School District to include the 20 districts within the KISD. By 1996, the College was serving more than 25,000 full- and part-time students.

Today, GRCC's eight-block downtown campus includes Spectrum Theater, the Applied Technology Center, several classroom buildings, two parking ramps, a learning center and library, a remodeled music building, a fieldhouse with natatorium, a student center, Bostwick Commons, and the state-of-the-art Calkins Science Center.

In addition, GRCC offers two Michigan Technical Education Centers (M-TECsSM) in West Michigan. The Patrick Thompson M-TECSM, located in Holland, opened in Fall 2000 in partnership with the Ottawa Area Intermediate School District. Its open entry/open exit instruction eliminates the need for students in the Center's manufacturing and industry-related occupational areas to conform to the traditional semester time frame. The Lesslie E. Tassell M-TECSM in Grand Rapids opened in 2002. This world-class facility offers training in manufacturing, auto service, and building and construction trades.

Educational opportunities are offered at other convenient off-site facilities throughout the metropolitan area as well.

In Fall 2002, more than 13,500 students enrolled in more than 1,600 liberal arts and occupational courses. The diverse student body represents students from Kent and surrounding counties as well as students from across the U.S. and 22 other nations. Another 10,000 learners are served by non-credit instructional opportunities. In addition to traditional classroom environments, students may also receive instruction through community and distant service-learning offerings, seminars, workshops, training classes, distance learning options and other educational formats. GRCC employs a faculty of more than 250 full-time and 350 part-time members as well as a staff of 400, all of whom are focused on the College's priorities to be student-centered, collaborative and flexible.

Throughout its 89-year history of academic excellence, GRCC has maintained a solid reputation as a premier transfer institution and is nationally recognized for both its liberal arts and occupational programs.

MISSION

It is the mission of Grand Rapids Community College to provide the community with learning opportunities that enable people to achieve their goals.

VISION

Grand Rapids Community College is a vibrant institution of higher education dedicated to enriching people's lives and contributing to the vitality of the community.

RAIDER VALUES

- R** Responsiveness
- A** Accountability
- I** Innovation
- D** Diversity
- E** Excellence
- R** Respectfulness
- S** Service



STRATEGIC OUTCOMES

We fulfill our mission by accomplishing the following ends:

Community Outreach

We serve the community as a quality educational resource providing leadership in response to the expressed needs of the community.

Community Partnerships

We actively collaborate with the community through partnerships and services.

Developmental Education

We prepare developmental students for college and/or work. All students are encouraged, supported, and given opportunities and the means to reach their goals within their own learning styles.

Diversity

We promote an understanding of diversity for all people in a quality, respectful, motivating environment.

Flexible Learning

We meet the needs of the community by providing flexible learning opportunities in a timely manner.

Lifelong Learning

We assist persons who want to continue, renew, or enrich their learning throughout their lives.

Transfer and Articulation

We provide quality liberal arts and transfer programs that enable students to continue their education successfully at other institutions.

Workforce Development

Students achieve the skills necessary for success in the workplace—today, tomorrow, and into the future.

INSTRUCTION MISSION STATEMENT

The purpose of instruction at Grand Rapids Community College is to foster active, responsible learning.

Grand Rapids Community College organizes its instruction into two schools, each with its own Dean/Associate Provost, and all under the leadership of the Provost and Vice President for Academic and Student Affairs. Each school combines the traditional Liberal Arts and Occupational Education programs.

■ School of Arts and Sciences

- Behavioral Sciences
- Biological Sciences
- Criminal Justice
- English
- Hospitality Education
- Language and Thought
- Mathematics
- Performing Arts
- Physical Science
- Social Sciences
- Visual Arts
- Wellness

■ School of Workforce Development

- Accounting and Office Administration
- Applied Technology
- Business and Technical Training
- Child Development
- Computer Applications
- Dental Auxiliary
- Drafting and Design
- Fashions and Interiors
- General Business
- General Health
- Manufacturing
- Nursing
- Occupational Therapy Assistant
- Occupational Training
- Radiologic Technology
- Workbased Learning

Liberal Arts Programs are committed to providing students with college level curricula that serve as a foundation for individual empowerment whether this takes the form of self-enrichment, the exercise of civic responsibility, pursuit of a profession, or the attainment of a baccalaureate degree.

Occupational Departments are committed to providing students with the skills, knowledge, and attitudes they need in order to succeed in their chosen occupations. Offerings reflect the needs and desires of students as well as the community's needs for educated workers.

To these ends Grand Rapids Community College offers courses and programs that:

- instill a sense of curiosity
- cultivate the capacity to learn
- broaden experience and understanding
- respond to community needs
- train students to enter and succeed in jobs
- prepare students for specific jobs
- retrain or improve students in present jobs
- transfer to four-year institutions
- transfer into related programs leading to advanced degrees at senior institutions

GRCC ASSURANCE OF QUALITY PLEDGE

Grand Rapids Community College (GRCC) believes in its students and in itself. Therefore, the College pledges to its students an Assurance of Quality.

1. Students who transfer to a baccalaureate-granting college or university with at least a "C" grade in the subject under question should be able to do as well as or better than their counterparts who enrolled as freshmen. If the students do not perform as well as or better than their counterparts, these students may, upon an official administrative written recommendation from the institutions in which they are enrolled, take again at no cost the requisite course or courses at Grand Rapids Community College which they need to remove proven deficiencies resulting from faulty Grand Rapids Community College preparation.
2. Students who have graduated from occupational programs at Grand Rapids Community College and who have earned a certificate or degree may expect to do competently the work for which they are employed if that work is what they were prepared for in their College curriculum.

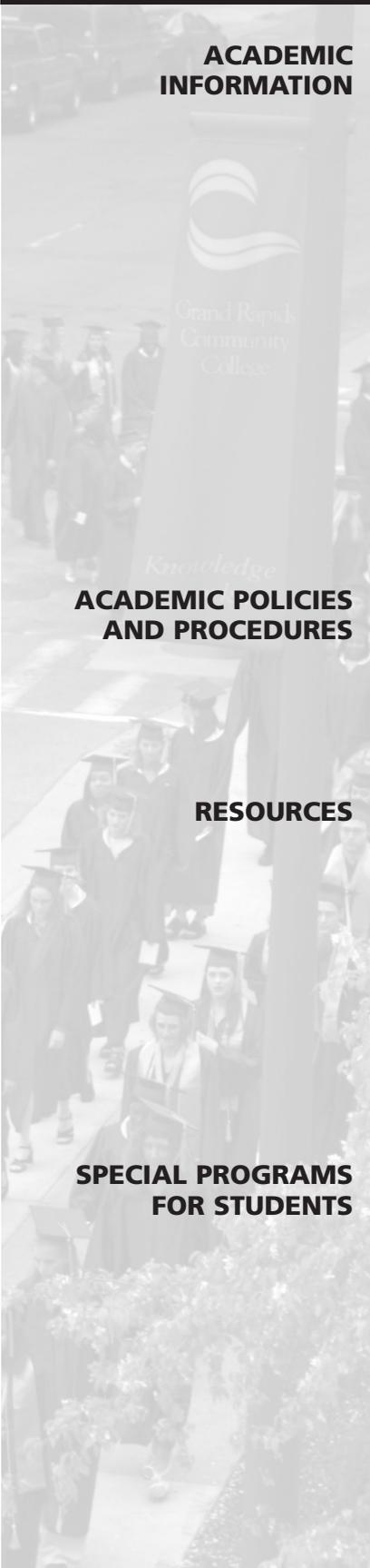
Any student who seeks help under the terms of the Assurance of Quality pledge needs only to go to the academic dean under whose administration the applicable course or courses exist. The two academic deans are the Dean of the School of Arts and Sciences and the Dean of the School of Workforce Development.

If any employer observes that a GRCC-prepared new employee does not have the skills he or she should have gained in his or her preparation at Grand Rapids Community College, that employer may, with a written citation of the deficiencies, request that the College remedy the deficiencies by giving the employee additional training. This training will be at no cost to the employee or employer.

This pledge applies only to those skills in which the student received training in his or her program at Grand Rapids Community College; it does not apply to students who fail to pass licensing, certification, or registration tests required by an external body.

In all cases, the transferring student must have transferred within a year after leaving Grand Rapids Community College. The students going directly into training-related employment must have done so within a year after having been graduated from Grand Rapids Community College.

This pledge applies to students entering Grand Rapids Community College in the fall semester of 1988 and thereafter.



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ACADEMIC INFORMATION

ADMISSIONS

(616) 234-4100

Room 105, Main Building,

7:30 a.m. - 6 p.m. Monday-Thursday; 7:30 a.m. - 5 p.m. Friday

Admission to Grand Rapids Community College is open to all high school graduates or those who have satisfactorily completed the General Education Development (GED) test. Other individuals who have the proper background, experience and intellectual capacity to benefit from college-level classes may be admitted to certificate programs or single courses. Grand Rapids Community College requires degree-seeking students with a high school GPA below 2.0 and an American College Test (ACT) composite below 16 to take a placement test before they can enroll in classes. (See Assessment and Placement below.) The process for admission is as follows:

Applicants seeking degrees or certificates or seeking to transfer to another college without earning degrees or certificates must:

1. Obtain an application for admission from your high school counseling office, the Grand Rapids Community College Admissions Office, or www.grcc.edu.
2. Submit a completed application form to the Assistant Dean of Admissions and Enrollment Management, Grand Rapids Community College, 143 Bostwick Ave. NE, Grand Rapids, MI 49503-3295.
3. Include with the application a \$20 **non-refundable** application fee.
4. Request an official high school transcript (college transcript if transfer student) be sent to the Admissions Office. High school transcripts will be retained at GRCC for one year.
5. In order to receive financial aid, a student must be in a degree or certificate curriculum.

Applicants not seeking degrees, not seeking to transfer, or desiring to take classes for personal interest:

1. Submit a completed application form to the Admissions Office at the time of registration.
2. Pay a \$20 **non-refundable** application fee upon billing.

Application Deadlines:

1. Applicants should apply as early as possible before the semester they plan to attend.
2. Applications are processed as they are received, but students are admitted for the Fall or Winter Semester, or Summer Session.
3. Degree-seeking students must submit a completed application by 12 noon the Friday before classes begin.

Assessment and Placement

Newly admitted degree-seeking applicants must attend academic planning sessions prior to selecting classes.

Students who enter Grand Rapids Community College intending to earn a degree or certificate will be required to take an assessment test unless their high school grade point average is

equal to or greater than 2.0 and their ACT Composite Score is 16 or above. To schedule an assessment test, call (616) 234-3577.

Home schooled students, General Education Development (GED) recipients, and students holding a Community Education Diploma are required to take the assessment test before placement.

The requirement to take the assessment test may be waived for students who have successfully completed English Composition (EN 101), Business and Technical English (BA 101), Elementary Algebra (MA 104), or the equivalent of these courses.

The College reserves the right to require students to take specific courses based on the results of the assessment test. Students who place into pre-college English, reading, or mathematics become part of the Academic Foundations Program, which is designed to assist students with basic skill deficiencies.

English Placement

Student placement in English will be determined by high school English performance, test scores on the American College Test (ACT) battery, and assessment test scores. If the high school average in English is below "C" and/or the assessment test score in English is not satisfactory, the student will be assigned to Academic Foundations English (EN 097). If the high school average in English is "C" or better and the assessment test score in English is acceptable, the student will be assigned to College Writing (EN 100), or English Composition (EN 101). The assignment will be made after conference with a counselor.

Exceptions to these criteria are allowed only after the student has had his or her case reviewed by a counselor and/or the Coordinator for Developmental Education. Special English courses are also available for students with limited English proficiency.

To be passed into EN 100 or EN 101, students assigned to EN 097 must receive a grade of "C" or better. Students who receive a "D" grade in EN 097 or who fail EN 097 must retake EN 097. Students who receive a "D" grade in EN 100 or EN 101 must repeat the course and earn a "C" or better before taking EN 102.

Reading Placement

Introduction to College Reading (RD 097) and College Reading (RD 098), are designed for students with reading needs as evidenced by their high school records or test results. The aim of RD 097 is to help students establish efficient reading habits and to acquire strategies to improve vocabulary. RD 098 will help students establish efficient reading habits as well as acquire strategies to improve comprehension and critical reading skills.

Students placed in RD 097 are required to pass both RD 097 and RD 098 unless exempted by a reading instructor based on course performance and/or post-test results.

RD 097 students must receive a grade of "C" or better to be passed into RD 098. RD 098 students must receive a grade of "C" or better to complete their reading requirement. Students who receive a "D" grade or who fail either course must retake that course.

Mathematics Placement

Student placement in mathematics courses will be determined by a combination of high school math performance, test scores on the American College Test (ACT) battery, and assessment test scores (ACCUPLACER). Students are encouraged to review basic algebra and arithmetic skills prior to taking the ACCUPLACER placement test. The chart below will be used as a guide in math placement based on performance on the ACCUPLACER placement score. The assignment will be made after conference with a counselor.

Test	Score		Course Placement
	Minimum	Maximum	
ACCUPLACER Algebra	0	40	Take ACCUPLACER Arithmetic Test*
	41	75	MA 104
	76	120**	MA 107
ACCUPLACER Arithmetic*	0	75	MA 003
	76	120	MA 104

* To be passed into MA 104, students assigned to MA 003 must receive a “C” or better. Students who receive a “D” grade in MA 003 or who fail MA 003 must retake the course. Students who receive a “D” grade in MA 104 or MA 107 are urged to repeat the course.

** A score above 95 along with high school transcript information may indicate readiness for MA 110, MA 131, etc. Visit the Mathematics Department Web page for detailed information.

Class Standing

Freshman: A student who has not yet earned twenty-four (24) credit hours.

Sophomore: A student who has earned twenty-four (24) or more credit hours but has not completed an associate’s degree program.

Post-Graduate: A student who has already completed a degree program.

Full-Time Student: A student who is enrolled for 12 or more credit hours each semester is considered to be full-time. Students (except music majors) wanting to enroll for more than 18 hours in a semester must get permission from the appropriate Dean. Because of the preparatory requirements of applied music majors who will transfer to four-year colleges and universities, music majors must enroll for 19 or 20 credit hours in some semesters.

Early College Students

Early College admission is available to students from any area high school who can benefit from enrolling in college credit courses to meet educational needs that cannot be accommodated by the local high school. Students must be in grade 11 or 12, have the recommendation and signature of the counselor and/or principal from the base high school, be pursuing a high school diploma, and be enrolled full-time at their base school.

To apply, students submit an Early College Application form with a \$20 **non-refundable** application fee to the high school counselor and/or principal.

If a student meets the criteria, the counselor or principal will sign the form and send the application and fee with an official high school transcript (academic record) to the Grand Rapids Community College (GRCC) Admissions Office. Upon arrival of the materials, the student will receive a letter from the College with enrollment and tuition payment instructions.

For admittance into their class(es), Early College Students **MUST** have a tuition receipt validated by the Cashier’s Office. An application and high school transcript must be sent to the GRCC Admissions Office for each semester of attendance. Early College Students must submit their completed application by May 15 for Summer and Fall and by November 15 for Winter.

Interested students should check with their high school counselor and/or principal for further information and details regarding Early College, or they may visit www.grcc.edu.

New Degree-Seeking Students

New degree-seeking students will be expected to attend an orientation, evaluation/assessment, and scheduling session prior to attending classes. Students who apply through the Admissions Office will receive an invitation to attend.

Transfer Students

Students previously enrolled in other colleges should submit an official transcript of all their college credits in addition to completing the general requirements for admission. While, in general, courses completed at accredited institutions are transferable to GRCC, this College reserves the right to evaluate such credit according to its own standards. Credits for grades lower than “C–” in any course may not be accepted for transfer and therefore will not be entered upon the permanent record.

Former Students

Grand Rapids Community College welcomes former students returning to college to continue their education. It is recommended that they consult with a counselor before scheduling classes. Additional procedures and/or fees may be required.

Re-Admission

Students who have withdrawn from the College in good standing and who desire to be readmitted should consult with a counselor before scheduling classes. Additional procedures and/or fees may be required. Students who have attended another college or university must provide an official transcript from that institution. Students readmitted after extended absence from the campus and who desire an associate degree will be required to fulfill the prevailing graduation requirements.

Students who have been withdrawn from the College for disciplinary reasons may, after a period of time set during the disciplinary process, petition the Dean of Student Affairs for readmission to the College. (See the section headed “Discipline Grievance Procedure.”)

International students who have been dismissed from the College for failure to maintain a GPA of 2.0 for two consecutive semesters may petition the Assistant Dean of Admissions and Enrollment Management for readmission to the College. (Also see the International Student section “Academic Regulations.”)

Guest Students

Students currently enrolled at other Michigan colleges or universities who wish to take Grand Rapids Community College (GRCC) courses under a Guest Student status should complete Part I of the Michigan Uniform Undergraduate Guest Application (available at the student's current institution or from the GRCC Admissions Office). Students should ask the Registrar at their current college to complete Part II and to forward it to **GRCC's Admissions Office**. **Guest Students must request that a Grade Transcript be sent to their current institution.**

HEALTH PROGRAMS

Individuals new to the college who are interested in enrolling in any Grand Rapids Community College (GRCC) Occupational Health Program must first apply to GRCC through the GRCC Admissions Office.

Entrance into the following Occupational Health Programs also requires formal acceptance from the Health Program Office:

- Associate Degree in Nursing
- Dental Assisting
- Dental Hygiene
- Occupational Therapy Assistant
- Practical Nursing
- Radiologic Technology

See program description for specific program entrance requirements. Call the Health Admissions Coordinator at (616) 234-4348 for additional information.

INTERNATIONAL STUDENTS

(616) 234-4100

Grand Rapids Community College is authorized by law to enroll non-immigrant alien students.

1. An International Student is any immigrant in possession of a current F-1 Student Visa. The student must complete a Grand Rapids Community College (GRCC) International Student Application. The \$20 application fee must be enclosed.
2. The student must present proof that he or she is a graduate of an accredited secondary school before admission to the college will be granted. **This should include a record of any post-secondary schooling the student has had in the United States as well.** All information must be translated into English by an official translator.
3. The student must provide proof of adequate proficiency in the English language. Admission may be granted to a student who has:
 - a. attained a score of 525 or better on the written version of the TOEFL.
 - b. attained a score of 197 or better on the computerized version of the TOEFL.
 - c. attained a score of 80 or better on the MELAB.
 - d. English as his or her native language.
4. The student must show proof of adequate financial resources for one year. Details are available in the International Student Application.

5. The student should be in good health and be eligible to obtain health insurance upon arrival in the United States. Typical health plans range from \$300 to \$500 per year. GRCC will require proof of adequate health coverage prior to allowing students to register for classes. Students may obtain health insurance through their parents or enroll in the Student Health Insurance Plan offered through GRCC.
6. The student must attend the International Student Orientation at the beginning of the first semester of his or her enrollment at GRCC.
7. The non-immigrant student must have an F-1 visa in his or her passport from a United States Embassy or Consulate. Non-immigrants holding a B-2 visitor's visa will not be considered for full-time admission to this College unless they have "Prospective Student" written by a Consulate Official on the B-2 visa in their passport. It is difficult to change status from B-2 to F-1 through the Immigration Service in the United States without the "Prospective Student" notation.
8. GRCC may assist students in finding housing in the area. However, since the College does not operate residence halls, housing is not guaranteed.
9. International students who will be transferring to GRCC must have their current Designated School Official complete the Transfer Agreement Form, available in the Admissions Office. Students must meet with the Designated School Official no later than 10 days after school begins to complete the transfer process.
10. GRCC does not provide assistance in securing host families.

Academic Regulations

1. International students must carry no fewer than 12 credit hours per semester. Taking fewer than 12 credit hours per semester is considered a violation of United States Immigration and Naturalization Service regulations. To avoid penalties, international students may not drop any courses without the International Student Advisor's approval.
2. Before international students may register for their first semester, they must take an assessment test and meet with the Designated School Official.
3. If at the end of the first semester international students have successfully completed 12 credits with a GPA of 2.0 or higher, they may continue regular studies. Otherwise, they will be in a probationary period for one semester. During this time they must file for Reinstatement with Immigration and Naturalization Services and complete no less than 12 credits with a cumulative grade point average of 2.0 or higher in order to continue studies at GRCC. **International students who fail to meet this requirement will be dismissed from the College.**
4. At GRCC, all credits earned in remedial classes are included in the 12-credits-per-semester requirement. They are also applied to graduation requirements.
5. GRCC considers international students' enrollment as their acceptance of the preceding policies. Any irregular academic or personal behavior will be brought before an International Student Affairs Committee for review.
6. The student may appeal any decision that he or she believes to be unjust. This appeal may be made to the Assistant Dean of Admissions and Enrollment Management.

Admission and Enrollment Procedures

International students will keep their F-1 visa in good standing as long as they:

1. Successfully complete (pass) 12 credits per semester.
2. Maintain no less than a 2.0 grade point average.
3. Make continuous progress toward their degree.
4. Pay all tuition and College bills in a timely manner.
5. Exhibit good citizenship.

The I-20 form will stay in effect through the enrollment period. It will, however, need to be endorsed no more than five days in advance of the departure date each time the student leaves the country.

International students wishing to apply for the Fall Semester must have submitted a complete application by June 1. Students wishing to apply for the Winter Semester must have submitted a complete application by October 1. GRCC does not admit international students for the Summer Session.

VETERANS

(616) 234-4120

Veteran's Application for Program of Education or Training:

To be completed by all veterans enrolling in the College who wish to file for veterans benefits while attending GRCC.

Grand Rapids Community College is approved by the State of Michigan to provide education at the college level under the provisions of the following laws:

- P.L. 138 (16) World War II–100% disabled
- P.L. 815 Vietnam disabled
- P.L. 358 Dependents of 100% disabled veterans
- P.L. 634 Orphans of veterans who have died as a result of a service-connected disability
- P.L. 631 Widows of veterans who have died as a result of a service-connected disability or wives of 100% disabled

Facts about Public Law 94-502

Veterans Education and Employment Assistance Act of 1976:

- **Provisions Effective January 1, 1977**
 1. Eliminates present G.I. Bill for persons entering service after December 31, 1976.
 2. Establishes contributory matching G.I. Bill for persons entering service after December 31, 1976.
- **Provisions Effective June 1, 1977**
Eliminates automatic advance payment. Veteran must specifically request advance pay, and school must agree to be able to comply with requirements of the law.
- **Provisions Effective December 2, 1977**
 1. Prohibits payment of educational assistance for any course when the assigned grade is not used in computing grade point average (includes withdrawals, except in mitigating circumstances).
 2. Provides that progress will be considered unsatisfactory, except in mitigating circumstances, whenever a veteran is not progressing at such a rate so as to graduate within the approved length of the course based on the remaining times as certified to the VA.

Standards of Progress for Veterans

The Veterans Administration requires that all recipients of veteran educational benefits maintain progress toward their stated academic degree. Therefore, all veterans receiving benefits must maintain an accumulated grade point average (GPA) of 2.0 to remain eligible for VA benefits. A veteran whose accumulated GPA falls below 2.0 will be placed on probation. A veteran will be allowed two semesters to bring his/her accumulated GPA to 2.0. If the veteran fails to do so, the VA will be notified of unsatisfactory progress. Enrollment will not be certified to the VA. Certification may resume once the accumulated GPA has reached 2.0. Two physical education credits will be waived for veterans under the age of 25. Contact the Registrar's Office for details.

A signed statement acknowledging these requirements will be required from veterans.

TESTING AND PLACEMENT

Credit by Examination

By passing one or more authorized tests, students may earn credit for courses without taking them. Exams are graded on a credit/no credit basis and do not impact GPA. Each college determines its own acceptance policy regarding transfer of these credits. **Students should check with their transfer college before testing.**

Grand Rapids Community College grants credit for all standardized national examinations and GRCC faculty-developed tests:

- **Advanced Placement Program (AP):** A program sponsored by the College Entrance Examination Board (CEEB). Credit is granted for scores of 3 or higher. Students must have an official transcript of their test scores sent to the Registrar directly from The College Board.
- **College Level Examination Program (CLEP)/Defense Activity for Non-Traditional Educational Support (DANTES):** Course-specific credit is granted for all subject-level examinations offered by the College Entrance Examination Board/Educational Testing Service; departmental non-course-specific credit is granted for general-level exams. Credit is granted for scores of 50 or higher. Students must have an official transcript of their CLEP test scores sent to the Registrar directly from The College Board, or an official transcript of their DANTES test scores sent to the Registrar directly from The Chauncey Group International/ETS/ACE.
- **ACT/Proficiency Examination Program (PEP):** Course-specific credit is granted for subject-level examinations offered by PEP; departmental non-course-specific credit is granted for general-level exams. Credit is granted for scores of 50 or higher. Students must have an official transcript of their test scores sent to the Registrar directly from Regents College/ACT.
- **Challenge Examinations:** Challenge examinations are GRCC faculty-developed-and-scored tests. Course-specific credit is granted for these subject-level examinations. Passing scores vary depending on specific exams. Students must have appropriate documentation and authorization sent to the Registrar directly from the Assessment Center.

TO OBTAIN THE MOST RECENT TESTING INFORMATION, CONTACT:

CAREER RESOURCE AND ASSESSMENT CENTER
(616) 234-3413 or (616) 234-4134

Credit by Transfer Evaluation

Evaluation Policy

Grand Rapids Community College requires students to complete at least 15 credits of academic course work, not including Physical Education Activity, at GRCC in order to be awarded an associate degree. Up to forty-five (45) credits may be transferred to GRCC as credit by examination or evaluation according to the following guidelines.

Advanced standing transfer credit is awarded for courses with grades of "C-" or higher from all institutions whose accreditation is recommended by The American Association of Collegiate Registrars and Admissions Officers (AACRAO). Transcripts are evaluated against the requirements of the student's chosen curriculum code, and only those courses which apply to the specific degree are transferred. Students must submit an official transcript in a sealed envelope directly to the Admissions Office.

If students have previously earned an associate's or bachelor's degree from another accredited educational institution, core group distribution requirements and general education requirements are posted.

Course-to-course credit is awarded when course content is identical to that at Grand Rapids Community College. Departmental credit (Example: MA 999 transferred as Math elective credit) is awarded when courses are similar but not identical. Although credits earned at other colleges for specific courses may be less than those required for specific GRCC courses, full course credit is awarded on these transfers, with the exception of English 101, 102, and PS 110. (Example: English Comp I at another college on quarters was 3 credits there and is awarded 2 here. Prior to graduation, students must complete an Independent Study in English for 1 credit). General education elective credit (ED 999) is awarded for course material completed at other accredited educational institutions which is not equivalent to any specific course at Grand Rapids Community College.

Curriculum-specific health courses for Nursing or Dental (AD, DX, OT, PN, RT) will be evaluated by the Health Departments once students attain "Ready" status. Departmental evaluation may be requested for specific courses in other specialty fields as necessary.

Credit from institutions which are on term calendars is converted to semester credit and transferred in at .667% per course.

- **AP/CLEP/DANTES Transfer Credit:** Students who have earned Advanced Placement or CLEP/DANTES credit from their previous accredited college or university must submit a copy of their official test scores directly to the Registrar to be considered for transfer to GRCC. Scores must meet Grand Rapids Community College standards as listed in the current catalog and will be posted, without fee, as transfer college AP/CLEP/DANTES credit.
- **Foreign Transcripts:** Above rules apply. Students are required to provide an official transcript along with a certified English translation of the transcript to one of the following accredited educational evaluation services: Academic Credentials Evaluation

Institute, Inc.; American Association of Collegiate Registrars and Admissions Officers (AACRAO)/Office of International Education Services; Educational Credential Evaluators, Inc.; Global Credential Evaluators, Inc.; Global Education Group, Inc.; International Education Research Foundation, Inc.; or World Education Services.

Grand Rapids Community College requires that a certified course-to-course evaluation from one of the above services and a copy of the original document be submitted directly to the Registrar for consideration of transferable credit.

- **Military Credit:** Above rules apply. Students must submit an official transcript from the applicable branch of service directly to the Registrar. Students who complete basic military training are granted two (2) Physical Education credits.
- **American Council on Education (ACE):** Above rules apply. Educational credit is granted for extracurricular learning and training programs through participating organizations, associations, businesses, government, industry, military or union affiliations. Students who successfully complete a training course and are interested in establishing a record of their non-traditional educational accomplishment must submit the required forms, signed by the participating organization's designated education representative, to the ACE Registry with a \$25 processing fee (a one-time fee for establishing and updating the student's record). For more information or to determine if your organization is a participating member, contact the Center for Adult Learning and Educational Credentials/Registry Office at (202) 939-9434. Upon receipt of an official ACE transcript, GRCC will award credit based upon ACE recommendations. To obtain an official transcript, students must write to:
Center for Adult Learning & Educational Credential
American Council of Education
ATTN: Registries
One Dupont Circle, Suite 250
Washington DC 20036-1193

GRCC's policies and procedures for awarding credit for extracurricular learning are subject to periodic reevaluation.

Standardized National Examinations

GRCC now recognizes and grants credit for all standardized national examinations. Additional examinations other than those listed below for CLEP/DANTES, PEP, and AP are currently being reviewed for equivalencies and credit hours. Contact the Assessment Center or Registrar's Office for additional information.

CLEP/DANTES

Candidate's score must be 50 or higher for CLEP. DANTES scores may vary.

National Exam	Equivalent Course(s)	Credit Hours
General Examinations		
English Composition (Without Essay)	EN999	6
English Composition With Essay	EN101, EN102	6
Humanities	HU999, EN/HU999	6
Mathematics, College.	MA003, MA104	8
Natural Science	BI998, PC998	6
Social Sciences & History	SS999, HS999	6

Subject Examinations

Composition and Literature

American Literature	EN261, EN262	6
Analyzing and Interpreting Literature	EN281, EN282	6
English Literature	EN242, EN243	6
Freshman College Composition	EN101, EN102	6

Foreign Languages

French, College-Level		
2 Semesters	FR101, FR102	8
4 Semesters	FR101, FR102, FR231	12
German, College-Level		
2 Semesters	GR101, GR102	8
4 Semesters	GR101, GR102, GR231	12
Spanish, College-Level		
2 Semesters	SP101, SP102	8
4 Semesters	SP101, SP102, SP231	12

Social Science & History

American Government	PS110	3
Educational Psychology, Intro. to	PY251	3
History of the United States 1	HS249	3
History of the United States 2	HS250	3
Human Growth and Development	CD118	4
Macroeconomics, Principles of	EC251	3
Microeconomics, Principles of	EC252	3
Psychology, Introductory	PY201	3
Sociology, Introductory	SO251	3
Western Civilization 1	HS101	4
Western Civilization 2	HS102	4

Science & Mathematics

Algebra, College	MA110	4
Algebra-Trigonometry, College	MA110, MA108	6
Biology, General	BI103, BI104	8
Calculus with Elementary Functions	MA133	5
Chemistry, General	CM103, CM104	8
Trigonometry	MA108	2

Business & Computer Applications

Accounting, Principles of	BA256, BA257	8
Business Law, Introduction to	BA207	3
Information Systems and		
Computer Applications	CO110	3
Management, Principles of	BA283	3
Marketing, Principles of	BA270	3

ACT PEP/Excelsior College

Anatomy and Physiology	BI121, BI122	6
Microbiology	BI127	4
Abnormal Psychology	PY231	3
Statistics	PY281	3

AP-ADVANCED PLACEMENT EXAMINATIONS

Minimum score of 3 is required for credit.

AP Test Name	Equivalent Course(s)	Credit Hours
Art, History of	AT105, AT106	6
Art, Studio: 2D Design	AT130, AT131	6

Art, Studio: 3D Design	AT150	3
Biology	BI103, BI104	8
Calculus AB	MA133	5
Calculus BC	MA133, MA134	10
Chemistry*		
Computer Science AB	CO126, CO226	6
Economics–Macroeconomics	EC251	3
Economics–Microeconomics	EC252	3
English Language and Composition	EN101, EN102	6
English Literature and Composition	EN242, EN243	6
Environmental Science	BI215	4
French Language	FR101, FR102	8
French Literature	FR231, FR232, FR999	12
German Language	GR101, GR102	8
Government and Politics/US	PS110	3
Government and Politics/Comparative	PS201	3
History, European	HS101, HS102	8
History, U.S.	HS249, HS250	6
History, World	HS295	3
Human Geography	GE135	3
Latin Literature (Foreign Language Credit)	HU999	8
Latin–Vergil (Foreign Language Credit)	HU999	8
Music: Listening and Literature	MU107	3
Music Theory	MU101, MU102	6
Physics B (Physics 1)	PH125	4
Physics C: Mechanics (Physics 2)	PH999	5
Physics C: Electricity & Magnetism	PH999	5
Psychology	PY201	3
Spanish Language	SP101, SP102	8
Spanish Literature	SP231, SP232, SP999	8
Statistics	MA215	4
*Chemistry score of 3	CM 109	5
score of 4	CM 103	4
score of 5	CM 103, CM 104	8

CHALLENGE EXAMINATIONS

Candidate's score must be 50 or higher.

(Faculty Developed)	Equivalent Course(s)	Credit Hours
ADN–Nursing, AD		
Nursing Assessment		
	of the Healthy Person	AD105 3
	Nursing of the Person With	
	Simple Health Needs	AD112 6
	Nursing of the Person With	
	Mental Health Needs	AD113 4
	Family Nursing: Childbearing	AD202, AD203 8
	Family Nursing: Aging	AD204 3
	Nursing of the Client With	
	Complex Health Needs	AD220 5
PN – Nursing, PN		
	Introduction to Practical Nursing	PN115 3
Business, BA		
	Business Word Processing	BA133 2
	Business Mathematics	BA150 4

Computer Applications, CO

PASCAL, Programming	CO126	3
COBOL, Programming	CO223	3

General Health, GH

Medical Terminology	GH110	2
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Music, MU

Intro. to Music Theory 1 and 2	MU101, MU102	6
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Technology, AP, DR, EG, EL, MN, TE

Machine Trades Blueprint Reading	AP114	2
Machinery's Handbook	AP231	2
Introduction to Drawing	EG101	3
Descriptive Geometry	EG121	2
Introduction to CAD	DR228	3
Technical Electricity	EL106	4
Introductory Machine Operation	MN119	4
Basic Arc Welding	MN136	4
Metallurgy	MN234	3
CNC and NC Machine Programming	MN235	3
Basic Statistical Process Control	MN249	3
Technical Mathematics	TE103/A, B, C, D	1-4
Advanced Technical Mathematics	TE104/A, B, C, D	1-4

COUNSELING AND ACADEMIC SUPPORT

Counseling Center (616) 234-4130

A Grand Rapids Community College (GRCC) counselor is available from 7:30 a.m. to 7:30 p.m. Monday through Thursday and from 7:30 a.m. to 5 p.m. on Friday in the Counseling Center. Students may call (616) 234-4130 for an appointment. **Counselors are available on a "Drop-In" basis during peak registration periods.**

The Counseling Center is designed to assist students in achieving academic and personal success. Professionally trained counselors are available to assist students with educational planning and intellectual, social and personal growth.

While attending college, students must make many important decisions regarding courses, program selection, and choice of careers. Students may need support and guidance in clarifying their values and goals and in dealing with interpersonal concerns and the stresses of college life. The Counseling Center assists students in achieving these personal and academic goals.

Academic Advising

Students are strongly encouraged to take personal responsibility for exploring possible majors, degrees and programs of study. Many support services offered at the College can assist students in accomplishing these goals. Counselors and faculty members are available to help students in understanding course placement, planning their academic programs, and selecting course schedules. Students should keep the Registrar's Office or Counseling Center informed of any changes in their curriculum code. (Note: Students changing into or out of a health curriculum should contact the Health Admissions Office.)

Career Resources

Career Resources helps students relate their academic pursuits and personal interests to career goals and objectives. This office provides an opportunity for students to explore various careers through the use of a career library, workshops, audio-visual aids, and career referrals. Career Resources is located in Room 336 of the Student Community Center. Office hours are 8 a.m. to 8 p.m. Monday and Thursday; and 8 a.m. to 5 p.m. Tuesday, Wednesday and Friday. For more information, call (616) 234-3890 .

Assessment Services

Grand Rapids Community College provides an opportunity for students to earn college credit through credit-by-examination testing. Other tests administered by Assessment Services include the following: aptitude, program placement, telecourse, special, and assessment for national testing agencies. In addition, students may take advantage of test anxiety workshops and tutoring services for test preparation. Assessment Services is a unit of the Career Resource and Assessment Center, which is located in Room 336 of the Student Community Center. The Assessment Services Office is open 8 a.m. to 8 p.m. Monday and Thursday; and 8 a.m. to 5 p.m. Tuesday, Wednesday and Friday. For more information, call (616) 234-4299.

Academic Support Services

The Academic Support Center is designed to help students who may need assistance with their course work or who may need to develop better study skills. This assistance is free and may be provided by peer or professional tutors, workshops and seminars, study skills information, special support programs and subject-centered tutorial labs. The Academic Support Center, located in Room 327 of the Student Community Center, is open 8 a.m. to 5 p.m. Monday through Friday. For evening appointments and additional information, call (616) 234-4149.

Tutoring

The Academic Support Center (ASC) will try to arrange for a student tutor to help a student understand course work and class assignments. Subject-centered tutorial labs in Biology; Mathematics; Health; Advanced Math, Physics, and Chemistry; Writing and Language; Business and Accounting; Computers; and Auto CAD/Pro-E/Mechanical Desktop are also available on a walk-in basis. At the ASC, enthusiastic and encouraging staff will provide students with academic and emotional support. All GRCC students are welcome, and all of the services are available free of charge. The Academic Support Center can make a difference in helping students achieve academic and personal success.

Locations of the various labs are listed in the Tutorial Labs section.

Workshops, Seminars, and Study Skills Information

The Academic Support Center provides workshops and seminars in a wide range of subject areas. Information regarding study skills development is also available in the Academic Support Center, Room 327 of the Student Community Center.

Special Programs

The Academic Support Center administers several federal- and state-funded programs to provide academic assistance to students who meet certain eligibility requirements. These programs include:

■ **Disability Support Services**

This office provides accommodations and support to students with disabilities. Arrangements for personal care services are the responsibility of the student (see Regulation 35.135 of ADA). For more information, contact the Program Coordinator at (616) 234-4140.

■ **At-Risk Program**

This program provides specialized services for students enrolled in basic courses (English, reading, mathematics, and study skills). For more information, call (616) 234-4145.

■ **Noorthoek Academy**

Noorthoek Academy is a program dedicated to providing a continuing education program in the arts and sciences for postsecondary special needs students, 18 years or older, who want to continue their education in a college setting. This exciting and innovative program features interactive learning between the student and the curriculum. The classes are designed for students who want to expand their knowledge and enrich their lives by learning more about key figures, discoveries, works and ideas that shape the world. For more information, contact the Program Director at (616) 234-4123.

■ **Occupational Support Program**

This program provides special services and support for students in occupational curriculums who are disabled, economically or academically disadvantaged, single parents, displaced homemakers, or who use English as a second language. Students involved in non-traditional training and employment are also eligible for the program services. For more information, contact the Program Director at (616) 234-4155.

■ **Student Support Services Program**

Student Support Services (SSS) is a federally funded program that provides opportunities for academic development, assists students with basic college requirements, and serves to motivate students towards the successful completion of their postsecondary education. The SSS program may also provide grant aid to current SSS participants who are receiving Federal Pell Grants.

To receive assistance, students must be enrolled or accepted for enrollment at Grand Rapids Community College in a degree-seeking program. Low-income students who are first-generation (neither parent graduated from a four-year college/university) and are in need of academic support are eligible to participate in SSS. For more information, contact the Program Director at (616) 234-3545

■ **Upward Bound Program**

This pre-college program is designed for low-income and first-generation college students who attend Creston or Ottawa Hills High School. The program assists students in building academic skills needed to successfully pursue postsecondary education or training.

The program emphasizes skills in reading, writing, math, and science and provides tutoring to students experiencing

difficulties. Upward Bound students also have the opportunity to attend a summer residential academic experience where they participate in various enrichment activities, college visitations, and student leadership conferences. For more information, contact the Program Director at (616) 234-4150.

Tutorial Labs

Many subject-centered tutorial labs are available to GRCC students on a walk-in basis. Professional and student tutors staff the labs; they assist students in completing homework assignments and answer questions about class lectures or readings assigned in textbooks. Listed below are various tutorial labs and locations. For hours of operation, please contact the Academic Support Center at (616) 234-4149.

Lab	Location
Adv. Math, Physics, and Chemistry Tutorial Lab . . .	103 CSC
ATC Open Computer Center	215 ATC
AutoCAD/Pro E/Mechanical Desktop Tutorial Lab	231 ATC
Biology Learning Center	106 CSC
Business/Accounting Tutorial Lab	211 North
Computer Assisted Language Learning Lab	513 North
Health Education Learning Lab	307 North
Mathematics Computer Lab	112 North
Mathematics Tutorial Lab	111 North
North Building Computer Lab (5th floor)	512 North
Writing Tutorial Lab	512 North

TUITION AND FEES

No student will be admitted to classes unless all tuition and fees have been paid. Exceptions will be made only when arrangements have been made with the Supervisor of the Cashier's Office. All registered students will receive instructions about payment procedures. Any dropping and adding of credit hours after the initial payment which results in additional cost must be paid by the end of business on the day the transaction occurs, as part of the drop/add procedure. **Grades, records, transcripts, and diplomas will not be distributed to students who have unpaid obligations to the College.**

MasterCard/Visa/American Express/Discover

These cards are accepted for payment of tuition and fees. Charges will be accepted over the phone by calling (616) 234-4070. Touchtone payments using MasterCard or Visa can be made by calling (616) 234-4001.

FACTS Payment Plan

Monthly payment plans are available through FACTS Tuition Management for the Fall and Winter semesters. Applications are available in the Cashier's and Financial Aid Offices, or students may register via the Web at www.grcc.edu. Students must enroll **each semester** for the FACTS Payment Plan. If a student does not pay his or her FACTS agreement in full by the last due date, the student will not be eligible to use the program again for one full year from the time he or she pays the account in full.

PAYMENT SCHEDULE

Fall 2003

If you register for classes by the end of business on August 12, 2003, your tuition and fees are due on August 13, 2003. If you register and/or add classes on or after August 13, you must pay at the time of registration.

Winter 2004

If you register for classes by the end of business on December 9, 2003, your tuition and fees are due on December 10, 2003. If you register and/or add classes on or after December 10, you must pay at the time of registration.

Summer 2004

If you register for classes by the end of business on April 20, 2004, your tuition and fees are due on April 21, 2004. If you register and/or add classes on or after April 21, you must pay at the time of registration.

Resident Status

The College defines the legal residence (domicile) of the student as the place where his/her home is maintained.

■ Resident tuition is assessed for:

- All students whose home has been maintained within the Kent Intermediate School District (KISD) for no less than six consecutive months prior to the start date of the semester (including Summer Session) for which the student is in attendance. Any time spent in attendance at any college in the area will not count toward these six months.
- Any student who lives with his/her family and the family has purchased a home in which they will live within the boundaries of the KISD.
- Any student who has attended GRCC for two years while living within the KISD and who has paid non-resident tuition during that time.

Non-Resident Status

■ Non-Resident tuition is assessed for:

- All students whose home has been maintained within the state of Michigan but not within the boundaries of the KISD.
- Any student who maintains a home within the boundaries of the KISD but who has not maintained such a home for six consecutive months prior to the start date of the semester for which the student is in attendance at any college in the area.

Out-of-State Status

■ Out-of-state tuition is assessed for:

- All students whose home has been maintained outside the state of Michigan during the six months prior to the start date of the semester for which the student is in attendance.
- Anyone who is not a citizen of the United States and who does not have permanent entry (for example, a Student Visa).

Residency Review

Often a question of proof of residency arises from students who have recently moved into the Kent Intermediate School District. Students requesting a change in residency status must submit a Residency Review form to the Cashier's Office with acceptable proof of residency prior to the start date of the semester for which the request is being made. Requests received after the semester start date will be considered for the following semester.

The College will accept as proof of residency a valid driver's license or State of Michigan ID with a dated change of address affixed to the back plus one of the following:

1. A dated voter registration card.
2. A dated Lease Agreement.
3. Proof of purchase (copy of Buy-Sell Agreement) of home for residence within the KISD.
4. Verifiable rent receipts. If rent receipts are not available, a notarized letter from the landlord will be accepted. Verifiable rent receipts must contain all the following information:
 - a. The address of the property being rented.
 - b. The dates of each payment.
 - c. Signature, address, and phone number of the landlord.

In all cases, the date of the change must be six months prior to the start date of the semester in which the student enrolls or six months prior to attendance at a college in the area.

Property Tax Credit

If a non-resident student, or the parents with whom he or she lives, owns property within the Kent Intermediate School District, he or she may receive tuition credit up to the amount of Community College tax paid but no more than the cost of resident tuition. Students must provide the Cashier's Office with a current copy of PAID SUMMER tax receipts.

Property tax credits will be processed only for property owned by an individual or a sole proprietorship. Credits will not be given for property owned by a corporation or partnership.

Residency Audit

Grand Rapids Community College will perform annual verification of residency information. Students who have misrepresented information or have falsified documents may have to repay tuition, verify back records, or may be dismissed from the College. If a student has mail returned to the College, a hold code will be placed on his/her records and the student must verify his/her residency at the Cashier's Office.

Students should direct any questions about residency, tuition/fee charges and payment to the Supervisor of the Cashier's Office, located on the first floor of the Main Building.

Tuition Rates

For the most current tuition rates see www.grcc.edu.

Fees (Fees are subject to change.)

- **Additional Tuition**
Applied Music fees for private instruction.
- **Application Fee**
Each new student must complete a GRCC Application form. The application fee of \$20 must be included.

- **Computer Permit Fee** (Non-students only)
A \$5 semester permit fee is charged to all non-students for computer use on campus.
- **Special Courses Fees**
Some courses require additional fees because of unusual costs encountered in their operation.
- **Student Records Fee**
This fee covers all student record related services, including but not limited to registration, drops and adds, grade reporting, graduation audits, transcripts, and diploma printing. The non-refundable fee is charged per semester based on the following scale:

0.1 to 5.99 contact hours	\$10.00
6.0 to 11.99 contact hours	\$20.00
12.0 + contact hours	\$30.00
- **Technology Fee**
A non-refundable technology fee is charged each semester based on the following scale:

0.1 to 2.99 contact hours	\$ 5.00
3.0 to 8.99 contact hours	\$10.00
9.0+ contact hours	\$15.00

Refund Policy

All refunds of tuition and fees will be based on the student's notification to the Registrar's Office of withdrawal. The percentage of tuition refunded to students who drop classes will be calculated for each class based on (1) the number of calendar days (including weekends) between its start date and end date (regardless of the number of days the class has met and/or the student has attended) and (2) the date the student notifies the Registrar's Office of withdrawal. Exceptions shall be made when the College cancels a class.

Withdraw on or before start date of class	100% Refund
Withdraw before 5% of calendar days	75% Refund
Withdraw before 10% of calendar days	50% Refund

- **Fee Refund**
The following College fees are non-refundable to students: Application Fee, Student Records Fee, and Technology Fee. The Special Course Fee is refunded based on the same percentage as the tuition refund schedule. The Supervisor of the Cashier's Office can authorize a refund under unusual circumstances.

FINANCIAL AID

(616) 234-4030

The GRCC Financial Aid Office staff assists eligible students in obtaining financial resources to pay the educational costs of attending college. The College supports the concept that the student and his/her parent(s) or spouse have the primary responsibility of providing financial resources for education. Students who believe their financial resources to be insufficient should apply for financial aid by submitting a Free Application for Federal Student Aid (FAFSA) or Federal Renewal Application to the Federal Processing Center, requesting that GRCC receive their application information. The Federal Processor will provide the student with a Student Aid Report (SAR) and will send the SAR data to the GRCC Financial Aid Office through electronic means. If the student did not list GRCC on the FAFSA, the stu-

dent must submit the SAR to the Financial Aid Office for processing. The amount of aid offered will be determined by the information on the SAR as well as by the availability of funds.

Student Eligibility—General Requirements

To be considered for financial aid (other than scholarships), a student must meet all of the following requirements:

- Demonstrate financial need
- Be a U.S. citizen or eligible non-citizen
- Be enrolled as a degree/certificate-seeking student or be preparing to transfer
- Maintain satisfactory academic progress
- Be registered with Selective Service (if applicable)
- Not be in default of a federal student loan or owe a repayment of a federal grant
- Possess a high school diploma or GED or achieve a minimum required score on the College assessment test

To assist students in successfully passing the College assessment test, students are encouraged to enroll in a GED-preparatory program with their local school district. The Registrar's Office can provide more information regarding these programs.

Financial Aid Application Deadline

Students are encouraged to apply for financial aid by early February to ensure best consideration. A student must have a complete, correct financial aid file in the Financial Aid Office **August 1, 2003**, to be awarded aid for tuition payment prior to the start of Fall classes. Files completed after this date will be considered "late" and will be processed in the order of their receipt. **Students with "late" financial aid files should plan to pay their tuition and fees with their own funds at the time they become due.** Information and applications for grants, scholarships, employment programs and loans should be addressed to:

Financial Aid Office
Grand Rapids Community College
143 Bostwick NE
Grand Rapids, MI 49503-3295
(616) 234-4030

Financial Aid Programs

At GRCC a broad range of financial aid resources is available to students. By combining federal, state, College and community-based resources, the Financial Aid Office staff will design a financial aid package to meet the student's financial need as established by the SAR. The financial aid resources include scholarships, grants, on-campus employment and loans. Students must repay loans; but scholarships, grants and employment are considered gifts or earnings and need not be repaid.

1. **Programs not based on need** - Each program requires different application procedures. Eligibility is determined jointly by the Financial Aid Office and the agency or department funding the program.
2. **Programs based on need** - Students are required to complete the Free Application for Federal Student Aid (FAFSA). Eligibility is determined by the FAFSA data and the Financial Aid Office. Continued eligibility is based upon the student's academic progress and the FAFSA data for the new year.

3. **Special programs** - These require students to apply directly to the agency or department responsible for determining eligibility and funding.

Programs Not Based on Need

GRCC Foundation Scholarships - The GRCC Foundation awarded more than \$900,000 to over 1,000 students in the 2002-2003 academic year. Most of the scholarships awarded by the Foundation are based upon academic ability; some are based upon financial need. Students are encouraged to apply for scholarships regardless of their current academic record. Applications for 2003-2004 Foundation scholarships awarded from the Financial Aid Office are available from the Financial Aid Office beginning January 2 and are due by March 17, 2003.

Applications for Foundation scholarships awarded by someone outside the Financial Aid Office can be obtained by calling the contact person listed in the scholarship booklet. Free scholarship booklets explaining over 200 GRCC Foundation scholarship funds are available from the GRCC Foundation Office, located in Room 501, College Park Plaza Building (CPPB), and from the Financial Aid Office.

Outside Scholarships - Scholarship announcements sent to the Financial Aid Office from civic organizations, foundations and private sources are posted outside the Financial Aid Office. More information can be obtained on the Internet at www.finaid.org.

Transfer Scholarships - Graduate transfer scholarships are awarded by the respective colleges and universities on the basis of financial need and/or academic achievement. Transfer scholarships available to GRCC students are posted outside the Financial Aid Office from November through April.

Michigan Alternative Loan Program (MI-LOAN) - This loan program is an alternative source of loan funds to creditworthy Michigan students and their families. Need is not a factor, but students must submit a Free Application for Federal Student Aid (FAFSA) to be considered. The student or an eligible co-signer must meet the Student Loan Authority's credit test. Interest is at a fixed 6.95% or variable; and repayment begins immediately, although the student may request to make only interest payments while enrolled. MI-LOAN applications are available from GRCC's Financial Aid Office, participating lenders, and from the Student Loan Authority.

Federal Unsubsidized Stafford Loan Program - The unsubsidized loan is not based on need. Eligibility is determined by taking the cost of attending GRCC and subtracting any financial aid the student has been awarded. The interest rate is variable, with a cap of 8.25%. Under the Federal Unsubsidized Stafford Loan Program, however, the student must pay the interest on the loan while enrolled in school, during the grace period, and during any periods of deferment or repayment. Students may defer the interest payments and allow them to be capitalized on their principal. Students selecting this option should be aware that their loan principal will increase based on the amount of that unpaid interest. A 3% origination fee is deducted from the total amount of the loan. Repayment of the loan principal begins six months after the student stops attending college at least half time. To be considered for this loan, students must first complete

the FAFSA, listing GRCC to receive the form, and obtain a loan application from their lender of choice.

Federal Parent Loan for Undergraduate Students (PLUS) -

Parents of dependent students may borrow funds under the PLUS Program up to the full cost of educational charges less other financial aid without regard to financial need. The interest rate varies with the Treasury Bill rate, and repayment begins 60 days after loan funds are disbursed. Applications for this loan are available from the lender of choice after the student has submitted a FAFSA form.

Programs Based on Need

Federal Pell Grant - This program is the main source of federal financial aid funds, awarding up to \$4,050 in 2003-2004. Students who are eligible to receive a Pell Grant will be notified directly by the federal government. To apply for a Pell Grant, the student must submit a FAFSA and request that GRCC receive the application. The student will then receive a notification from the Financial Aid Office regarding eligibility for the Pell Grant. The exact amount of the grant is determined from a payment schedule published by the U.S. Department of Education.

Federal Supplement Educational Opportunity Grant (SEOG) -

These federal grants, ranging from \$100 to \$1,000, are awarded to students of exceptional financial need who, without the grant, would be unable to continue their education. No specific grade point average is required for renewal. However, students must be making satisfactory academic progress to remain eligible and must apply for financial aid before funds are exhausted. Priority is given to students who qualify for the Pell Grant Program.

Michigan Educational Opportunity Grant (MEOG) - The state of Michigan provides grant assistance for needy undergraduates who are enrolled at least half-time. Students must submit the FAFSA to be considered. Because funds are limited, MEOG is targeted to students with the greatest financial need.

Michigan Adult Part-Time Grant - This program is designed to provide grants to financially needy students who enroll as part-time students (6-11 credits). A student must be considered independent (by the federal financial aid definition), be out of high school for at least two years, and be a Michigan resident. He/she must file a FAFSA and complete a Michigan Adult Grant application to be considered. Students can receive this grant for a maximum of four semesters, up to \$300 a semester.

Special Populations Tuition Reimbursement Grant - These grants are available to students who are enrolled in occupational curriculums, show financial need, and meet other Special Populations Program requirements. Students must submit a FAFSA and contact the GRCC Special Populations Coordinator for application materials.

Federal College Work Study Program - This program provides part-time jobs to students on campus. Students must be enrolled at least half-time and submit a FAFSA to be considered for work study. After an award is made, the student must contact the Job Placement Office for available job opportunities.

Michigan Work Study Program - GRCC also receives funds from the State of Michigan to provide work opportunities for needy undergraduate and graduate students. The guidelines for this program follow those of the Federal College Work Study Program.

Federal Stafford Loan Program - This federal loan program provides loans to students to help meet their educational expenses. Interest rates are variable, with an 8.25% cap. If a student is eligible for a subsidized loan, the federal government will pay the entire interest charge while the student is in college. Students must demonstrate financial need and enroll at least half-time to qualify. A student can borrow up to \$2,625 for the freshman year and \$3,500 for the sophomore year. Students must submit the FAFSA and submit a loan application from the lender of choice.

Federal Family Education Loan Program (FFELP) - The Federal PLUS Loan, Federal Stafford Loan and Federal Unsubsidized Stafford Loan Program all make up the FFELP. The FFELP Program is a heavily-regulated program and has specific requirements that must be met before the student can apply for and receive a loan disbursement. **Students must submit a FAFSA prior to applying for a student loan.** Loan applications cannot be processed until all necessary documents have been received, including all required financial aid transcripts, and the student is registered for at least six credit hours. To use a FFELP to help pay Fall Semester tuition, the Financial Aid Office must receive the completed loan application and all necessary documents by **August 1, 2003.**

Loan terms, sample repayment schedules, and entrance and exit counseling information can be obtained from the Financial Aid Office.

Short Term Emergency Loans - For a small service fee, short-term loans are available to students. Students should contact the Financial Aid Office, Dean of Student Affairs or counselors regarding the following short-term emergency loans:

- Charlotte A. Gierst
- Thomas Kindel
- Minority Student Loan
- Special Needs Loan
- Stephensen and Lawyer

The amount of the loan is determined by the Financial Aid Office, and the repayment plan is set up by the Dean of Student Affairs or Cashier's Office staff.

Special Programs

Tuition Incentive Program (TIP) - This Michigan program is designed to encourage high school students to graduate and go to college. Students must apply for TIP prior to their high school graduation, and the Family Independence Agency determines eligibility. TIP will pay tuition and fees for students who don't live in a different community college district. TIP eligibility expires four years after the student graduates from high school or earns 80 credit hours (whichever comes first).

Native American Tuition Waiver - The State of Michigan has provided funds which permit tuition waivers for all Native Americans who can certify 25% or more Indian blood. Students should contact their tribal council for application materials. They must also pay their required fees and be enrolled in a degree/certificate program.

Method of Payment

Students who have been awarded grants, scholarships, and/or Federal Family Education Loans will have their awards credited to their account. Any remaining funds will be transferred to the Bookstore one week prior to the beginning of each semester and will remain on the Bookstore account through the first week of school. Any funds remaining after the Bookstore charges have been debited will be mailed to students 21 days after the first day of classes.

Frequency of Financial Aid Payments

All financial aid payments will be applied on a semester-of-enrollment basis.

GRCC is a commuter college with no dormitory facilities; therefore, the college has no charges for room or board. However, for the calculation of financial need only, the college uses reasonable Room/Board, Books/Personal and Transportation figures established by the Michigan Department of Education. The figures for 2002-2003 were:

Room/Board	\$3,258
Books/Personal	\$1,328
Transportation	\$1,159

These figures are used solely for determining financial aid and **are not charges billed to the student.**

Federal Return of Funds

Federal financial aid recipients who withdraw from all of their classes during a semester are subject to the Federal Return of Funds Policy. This policy determines the amount of federal aid students earn based on the amount of time they were enrolled for the semester. Federal aid will be reduced and students will be required to repay both the federal financial aid programs and GRCC for the amounts returned to the programs. Students who fail to make arrangements to repay the programs within 45 days of notification will be reported as overpayments to the U.S. Department of Education. Students in overpayment are ineligible for future financial aid at any institution.

Examples of completed forms for the Federal Return of Funds calculation are available in the GRCC Financial Aid and Cashier's Offices. Students are encouraged to review these examples prior to withdrawing from classes.

Satisfactory Academic Progress Policy

Federal regulations require students to make satisfactory academic progress toward the completion of a certificate or an associate degree to be eligible for financial aid. Satisfactory Academic Progress (SAP) for financial aid recipients is applied after students have attempted at least 12 credits at GRCC. (Progress at institutions other than GRCC will not be considered.) Satisfactory Academic Progress will be reviewed at the end of the Winter Semester.

Standards of Satisfactory Academic Progress Receiving Financial Aid

A. Students must maintain a cumulative grade point average of not less than the following:

Credit Hours Attempted	Minimum Cumulative GPA Required
1 - 14	1.50
15 - 28	1.75
29 and above	2.00

- B. Students must complete with a passing grade a minimum of 65% of all the credit hours attempted at GRCC, whether or not financial aid was received for those attempted credits.
- Grades of A, A-, B+, B, B-, C+, C, C-, D+, D and D- are considered passing.
 - Grades of E, I, X, V, W, WP, WF, NS and N are not considered passing and must be considered attempted credits.
 - If a student repeats a course, the lower grade is not considered passing and the higher grade is considered passing (if the higher grade is one of the grades in Item 1 above).
 - Non-credit remedial course work is not included in the number of credits attempted or completed.
- C. Satisfactory Academic Progress also requires that financial aid recipients complete their associate degree or certificate within the time frame which, by federal regulation, is 150% of the published length of the program. For example, if a student is in an Associate Degree program that requires 62 credits, the degree must be completed in a maximum of 150% of 62 credits (93 credits including both attempted and completed). Students should consult the GRCC Catalog to find the number of credits required in their Degree or Certificate program and then multiply that number by 1.5 to determine the maximum number of credits.
- When students have attempted the maximum number of credits, financial aid will be terminated.
 - All credits attempted must be taken into consideration when determining the maximum number of credits, whether or not students received aid for those attempted credits.
 - All grades listed in paragraph B, Items 1 and 2, and repeated courses must be counted in determining the maximum number of credits.
 - Credits accepted from transfer institutions must be included in the total attempted credits.

Financial Aid Suspension

If students are not meeting the Satisfactory Academic Progress requirements at the end of the Winter Semester, they will be placed on financial aid suspension. Students on suspension are not eligible to receive financial aid.

Suspension Appeals

If students fail to meet Satisfactory Academic Progress guidelines due to circumstances beyond their reasonable control, they may appeal their suspension. All appeals must be submitted in writing on the Satisfactory Academic Progress Appeal form to the Financial Aid Office. Students submitting appeals should state the reasons why satisfactory academic progress was not made and dis-

cuss actions that have been or will be taken to make satisfactory progress in the future. **Neutral third party documentation supporting the reasons for the appeal must be attached or the appeal will be denied. Statements from family members and friends are not considered neutral and will not be accepted.** Unusual circumstances beyond the reasonable control of the student, such as injury or illness, death of a relative, or other special circumstances, may be grounds for a successful appeal.

Appeals must be received no later than one week before the semester begins. Appeals received after that time will be considered to be appeals for the following semester, unless the student has registered and paid for classes. If an appeal is approved, the student will be placed on probation.

REGISTRATION

(616) 234-4001

Grand Rapids Community College (GRCC) offers a variety of options for registration. The most current open class sections are available on the Web page at www.grcc.edu.

- Web-based registration is available seven days a week from 6 a.m. to 11 p.m. at www.grcc.edu. Assistance with Web registration is available at computer labs across campus and at the Registrar's Office.
- For Automated Touch-Tone Telephone Registration, please call (616) 234-4001. Touch-Tone Registration and Grade Reporting are available to the general student population. Students enrolled in special programs/curriculums may not be permitted to use this service. Students may obtain their grades and their overall GPA, register for classes, add or drop classes, or list their schedule by calling (616) 234-4001 from 6 a.m. to 11 p.m., seven days a week.
- Students may register in person at the Registrar's Office, Room 148M, or the Counseling Center. Instructions and timelines for registration are included in course schedule booklets published annually. The booklets are available in several locations, including the Registrar's Office, the Academic Support and Counseling Center, and the Information Office; they are also available at www.grcc.edu.

These following forms are available at the Registrar's Office:

- **Change of Address Card**—To be completed by students who change their permanent and/or local address from the one previously registered with the College.
- **Graduation Audit Form**—To be completed by all students who intend to graduate.

Returning Students

Students already enrolled in the College will register during the latter part of each semester. Final registration for both new and returning students will occur on the dates designated in the Academic Calendar.

Minimum Class Enrollment

Grand Rapids Community College reserves the right to cancel any class in which too few students enroll.

ASSOCIATE'S DEGREES AND CERTIFICATES

Students preparing to graduate should file a Graduation Audit in the Registrar's Office the semester before they plan to graduate. The student must initiate this process. GRCC offers the following seven Associate's Degrees:

- Associate in Arts
- Associate in Science
- Associate in Music
- Associate in Nursing
- Associate in Applied Arts and Sciences
- Associate in Business
- Associate in General Studies

Associate in Arts

Associate in Science

Associate in Music

Students who plan to transfer to liberal arts and science colleges or universities and who wish to pursue a sequence of courses leading to a degree in areas such as humanities, mathematics, science, social science, education, business administration, engineering, music, law and many others should follow the prescribed curriculums found in the Transfer College Information section of this catalog. Students should consult a faculty advisor or counselor at least once a year to ensure that the entrance requirements of the institution to which they intend to transfer have not changed.

Associate in Nursing

An Associate in Nursing degree is one way to become a registered nurse. After receiving the degree students are eligible to complete the state board examination and become registered nurses. Some graduates transfer to four-year institutions to earn a B.S.N.

Associate in Applied Arts and Sciences

For students wishing to pursue two years of occupationally oriented study beyond high school in child development, business, health, hospitality education, criminal justice, computer and technology areas, the AAAS degree is an option. Students are encouraged to follow the specific curriculum found in the GRCC Curricula section of this catalog. Students are also encouraged to check with a counselor or faculty advisor regarding their progress.

Associate in Business

Students who desire a specialization in the field of business are encouraged to follow one of the specific curricula outlined in the GRCC Curricula section of this catalog. The Associate in Business degree will be awarded to those students who successfully fulfill all the requirements in their chosen area. This degree prepares graduates for entry into many business occupations. Students who know what area they want to follow can be assured of many opportunities in the outlined specialties.

Associate in General Studies

Students who wish to follow a curriculum with a wide choice of course offerings and who do not intend to transfer to a four-year institution may fulfill the requirements and take other electives leading to the Associate in General Studies degree.

CERTIFICATES

Certificates are awarded for satisfactory completion of courses of study requiring less than 60 credit hours of course work. A 2.0 cumulative grade point average is required for graduation with a certificate.

MULTIPLE DEGREES

Multiple degrees may be granted when requirements in this section are met.

- A. Students who complete the requirements for more than one associate's degree may be awarded more than one degree.
- B. All requirements for the first associate degree must have been completed at least one semester (Fall, Winter, or Summer Session) before the requirements for the second degree are completed.
- C. At least one-half of the added requirements for the second (or third, etc.) associate's degree must be earned at Grand Rapids Community College.

A candidate for graduation who has maintained continuous enrollment may follow, insofar as possible, the requirements listed for the desired degree in the College catalog in effect the year this student entered the College. The appropriate Dean or his or her designee must approve any deviation from this rule in writing.

GRADUATION REQUIREMENTS

Associate Degree

Grand Rapids Community College, like most other colleges and universities across the country, sets its own graduation requirements. The responsibility for fulfilling these requirements is the student's. It is therefore imperative that students familiarize themselves with the requirements.

Students must fulfill the **general requirements** regardless of the program they are in. A second set of requirements, referred to as the **general education or group distribution requirements**, is distributed over the subject areas of humanities, social sciences, natural sciences, and mathematics. Students must meet **both** sets of requirements to graduate with an associate degree from GRCC.

Students who intend to transfer to four-year colleges or universities to pursue a bachelor's degree must also know the requirements of the institution to which they plan to transfer. Satisfying GRCC requirements does not necessarily fulfill the requirements of those institutions. Proper planning makes it possible to satisfy GRCC requirements as well as those of the transfer institution.

Since some GRCC classes are not intended for transfer credit, and since each senior college or university decides which courses it will accept for transfer credit, it must not be presumed that a student who has been awarded the Associate in Arts degree from GRCC will always be given junior status at the four-year college or university.

GENERAL REQUIREMENTS

To be awarded an associate's degree at Grand Rapids Community College, students must:

1. Complete at least 62 credits of course work.
2. Complete at least 15 credits of course work at GRCC.
3. Have earned a cumulative grade point average of at least 2.0 in all course work.
4. Have completed the following:
 - a. One Wellness (WE) credit is **required** of all students for graduation. Up to two (2) WE credits from the Health and Wellness Department may be included in the 62 credits. Additional Health and Wellness Department credits may be included if they are required in an Academic Program. Physical Education (PE) theory classes can be used as elective credits in associate's degree programs.
 - b. Three credits of PS 110 or equivalent.
 - c. At least six credits of English composition are required for students matriculated for the Associate in Arts, Associate in Nursing, Associate in Music, or Associate in Science degree. All students planning to transfer to a baccalaureate program are advised to take EN 101 and EN 102, or EN 100 and EN 102.
5. Have completed the Group Distribution Requirements appropriate to the degree for which they are matriculated. For this purpose, the following Groups are defined:

Group I – Humanities:

AR 111*	MU 107, 109, 235,
AT 105, 106, 270, 271	236, 237
EN (any 200 level)	PL (any courses)
Foreign Language	PO 105
HU (any courses)*	SC (any courses except
TH 248	SC 171 and 172)

Group II – Social Sciences:

AN (any courses)	PS (any courses)
CJ 110, 111, 140,	PY (any courses)
235, 236, 237*	SS (any courses)*
EC (any courses)	SO (any courses)
GE (any courses)	SW (any courses)
HS (any courses)	

Group III – Natural Sciences and Mathematics:

(Courses identified as “non-lab” cannot be used to satisfy “laboratory science” requirements.)

AS 103, 102 (non-lab)	GE 132 (non-lab)*
BI (any courses)	GL (any courses)*
BA 150, 254 (non-lab)*	MA (any courses except
CM (any courses except	MA 003) (non-lab)
CM 100 and CM 102)	PC (any courses)
(CM 236 and 237 or	PY 281 (non-lab)*
CM 238 and 239	TE 103, 104, 132
count as lab class)	(non-lab)*
CO 124, 127, 225,	
227 (non-lab)*	

* These courses may not be accepted by some baccalaureate institutions as meeting their distribution requirements. Consult the transfer institution for its distribution requirements.

APPROVED ASSOCIATE IN SCIENCE REQUIREMENTS

Natural Sciences Course Sequences

A minimum of twenty (20) credit hours, including two 2-semester course sequences taken from two subject areas, one of which must be a laboratory science course.

Biology Course Sequences

BI 101 and 232	BI 103 and 232	BI 104 and 207
BI 103 and 104	BI 104 and 232	BI 121 and 122
BI 151 and 152		

For a biology major sequence, BI 151 and BI 152 are recommended.

Mathematics Course Sequences

MA 108 and 110	MA 129 and 215	MA 133 and 245
MA 131 and 245	MA 133 and 134	MA 110 and 129
MA 129 and 131	MA 133 and 215	MA 110 and 215
MA 131 and 133	MA 134 and 255	MA 127 and 129
MA 131 and 215	MA 255 and 257	MA 127 and 215

Physical Science Course Sequences

CM 103 and 104	CM 113 and 114	PH 125 and 246
CM 103 and 114	CM 231 and 241	PH 245 and 246
CM 109 and 231	CM 236, 237 and	CM 238, 239
PH 126 and 245	CM 104 and 113	PH 125 and 126

ASSOCIATE DEGREE GROUP DISTRIBUTION REQUIREMENTS

In addition to the General Requirements, candidates for associate degrees must fulfill certain group distribution requirements unique to each degree. These are listed by degree.

Associate in Arts

Meets the MACRAO agreement. EN 100 or 101 and EN 102.

Group I – Humanities:

At least eight credits of course work in two or more subject areas.

Group II – Social Sciences:

At least eight credits of course work in two or more subject areas including PS 110.

Group III – Natural Sciences and Mathematics:

At least eight credits of course work in two subject areas, one of which must be represented by a laboratory science.

Associate in Science*

Meets the MACRAO agreement. EN 100 or 101 and EN 102.

Group I – Humanities :

At least eight credits of course work in two or more subject areas.

Group II – Social Sciences:

At least eight credits of course work in two or more subject areas including PS 110.

Group III – Natural Sciences and Mathematics:

At least 20 credits of course work including two 2-semester sequences in two different subject areas, one of which must be represented by a laboratory science.

- * *If not interested in obtaining the MACRAO stamp, students matriculating for the Associate in Science must satisfy requirements from only two groups: either Group I or Group II and Group III. Students intending to transfer to baccalaureate programs should know that most universities require science students to take courses in both humanities and social sciences. Students are advised to consult with their intended transfer institution representative for details.*

Associate in Music

Students earning an Associate in Music must complete at least nine credits from Groups I, II, and III, taking one class from each group (some MU courses do not fulfill Group I requirements for this degree). Students intending to transfer to baccalaureate programs should consult with the Performing Arts Department Head for advice in selecting their courses.

Other requirements for the Associate in Music are:

- 16 credits in music theory
- 9 credits in music history and literature
- 8 credits in applied music
- 4 credits in technique
- 4 credits of ensemble
- 4 credits of interpretation
- 4 credits of piano

Associate in Nursing

Students matriculated for the Associate in Nursing must submit at least twelve credits from Group II and ten credits from Group III. Usually, these are the following courses: PY 201, 232, PS 110, and SO 251 from Group II; and BI 121, 122, and 127 from Group III. (See the Associate Degree Nursing curriculum in the GRCC Curricula section of this Catalog.)

There is no Group I requirement for this degree. Nursing students must maintain a minimum grade point average of 2.0 (80%) in each of the required Nursing courses.

Associate in Applied Arts and Sciences

1. AAAS, General Option

Students must complete at least 30 credits in Occupational Education courses, and the following:

Group I – Humanities:

At least six credits of course work in two subject areas.

Group II – Social Sciences:

At least eight credits. (The courses taken to meet General Requirement 4b may be part of these.)

Group III – Natural Sciences and Mathematics:

At least eight credits, which must include a four-credit laboratory science course.

2. AAAS, Technology Option (Code 900)

- **Technology Credits–34, including:**
 - Technology–DR, EL, ER, MN, TE, TM, TR
 - Technology for Industry–TI
 - Technology Module–TM
 - Apprenticeship–AP
 - Architecture–AR
 - Engineering–EG

- **Communication Credits (choose 1 combination)–6:**
 - EN 101 and EN 102 (suggested)
 - BA 101 and BA 102
- **Humanities Credits–3:** SC 131 (suggested) or SC 135
- **Political Science Credits–3:** PS 110
- **Natural Science and Mathematics Credits–8:**
 - Minimum 3 credits with lab; suggested courses include: PH 115, MN 217 or TE 114
- **Elective Credits–7:**
 - One WE activity can be used as an elective.
- **Wellness Credits–1**

Total Credits/Program: 62

3. AAAS, Apprenticeship Option

Students matriculating for the Associate in Applied Arts and Sciences must complete a program of related instruction for a specific apprenticeable trade at a community college or other postsecondary accredited institution, as evidenced by a certificate of completion issued by the participating company whose program is registered with the Michigan Department of Education and/or the Bureau of Apprenticeship and Training, U.S. Department of Labor. Students must also complete at least 34 credits in Technology- or Engineering-related courses, as prescribed by a faculty advisor in the Manufacturing, Applied Technology or Drafting and Design departments, and must meet the following group distribution requirements:

Group I – Humanities :

At least three credits.

Group II – Social Sciences:

At least three credits of PS 110 or equivalent.

(The courses taken to meet General Requirement 4b may be part of these.)

Group III – Natural Sciences and Mathematics:

At least eight credits, which must include a minimum of one laboratory science course. Under the Apprenticeship Option, the following courses are accepted as laboratory sciences: MN 217, PH 115, and TE 114.

4. AAAS, Specific Occupational Curricula

The Associate in Applied Arts and Sciences can be awarded to students who complete the requirements of specific two-year Occupational Education curricula as described in the GRCC Curricula section of this Catalog.

Associate in Business

The requirements of each curriculum in Business are listed separately under Business Programs in the GRCC Curricula section of this Catalog. Students earning the Associate in Business must understand that this degree is not intended as a transfer degree, although many baccalaureate institutions will accept at least some of the required GRCC course work.

Associate in General Studies

This degree program provides students with a great latitude in designing their own academic programs, since they must satisfy only minimal group distribution requirements. Students earning the Associate in General Studies must understand that this degree is not considered a baccalaureate transfer degree by most four-year institutions.

Students matriculated for the Associate in General Studies may substitute any of the following for EN 102: BA 102, SC 131, SC 135, any foreign language course, or any computer programming course.

Group I – Humanities:

At least three credits.

Group II – Social Sciences:

At least six credits. (The courses taken to meet General Requirement 4b may be part of these.)

Group III – Natural Sciences and Mathematics:

At least three credits.

GENERAL LEARNER OUTCOMES (GLOs)

As Grand Rapids Community College continues to focus on improving student learning, a system for assessing students' achievement of General Learner Outcomes is being developed. Grand Rapids Community College believes that all graduates should possess certain fundamental skills, attitudes, and abilities that will enable them to learn and perform more successfully in future personal, educational, occupational, and social endeavors. A set of eight General Learner Outcomes has been developed to ensure that graduates have basic competence in technology, communication, computation, critical thinking and problem solving, information management, interpersonal and personal skills, diversity, and community awareness. General Learner Outcomes will be embedded in courses throughout the curriculum. **These will become part of graduation requirements for students enrolling for the first time in Fall Semester 2005.**

Competencies addressed by the General Learner Outcomes include:

1. **Technology skills** (computer literacy, internet skills, and retrieving and managing information via technology)
2. **Communication skills** (reading, writing, speaking, and listening)
3. **Computation skills** (understanding and applying mathematical concepts and reasoning, analyzing, and using numerical data)
4. **Critical thinking and problem solving skills** (evaluation, analysis, synthesis, decision making, and creative thinking)
5. **Information management skills** (collecting, analyzing, and organizing information from a variety of sources)
6. **Interpersonal skills** (teamwork, relationship management, conflict resolution, and workplace skills)
7. **Personal skills** (ability to understand and manage self, management of change, learning to learn, personal responsibility, aesthetic responsiveness, and wellness)
8. **Diversity and community skills** (ethics; citizenship; diversity/pluralism; local, community, global, and environmental awareness)

MACRAO AGREEMENT

The Michigan Association of College Registrars and Admissions Officers (MACRAO) promotes an agreement to facilitate the transfer of students from community colleges to senior colleges and universities. The intent of the agreement is to ensure a common understanding and agreement among signatory institutions as to general education requirements.

The agreement provides that a student who meets the course and unit requirements (see following list) at GRCC and who is accepted as a transfer student by a signatory senior college or university is not required to pursue further freshman- or sophomore-level general education requirements at the signatory four-year college or university.

Requirements for the MACRAO agreement:

- | | |
|-------------------------|---|
| 1. English Composition | 6 |
| 2. Humanities | 8 |
| 3. Social Science | 8 |
| 4. Science-Mathematics* | 8 |

* At least one of the science courses must be a laboratory course.

Four-year colleges and universities which are signatories to the MACRAO agreement:

Adrian College*
 Albion College
 Alma College*
 Aquinas College
 Baker College
 Central Michigan University
 Cleary College*
 Davenport University
 Detroit College of Business
 Eastern Michigan University
 Ferris State University
 Grand Valley State University
 Kettering University
 Lake Superior State University*
 Lawrence Technological University*
 Madonna College*
 Michigan State University*
 Michigan Technological University*
 Northern Michigan University
 Northwood University
 Oakland University*
 Olivet College
 Saginaw Valley State University
 Sienna Heights College*
 Spring Arbor College
 Western Michigan University

* *Four-year colleges and universities which have attached provisos to their agreement are indicated by an asterisk (*). Usually the provisos can be satisfied in a transfer student's junior and senior years. The specifics of these provisos can be obtained from the Registrar at GRCC or from the senior institution to which a student expects to transfer.*

Four-year colleges and universities who are signatories to the MACRAO Agreement reserve the right to evaluate individually for transfer credit each course the prospective student has completed at GRCC.

GRADING POLICY

Calculation of Honor Points

The use of plus and minus is optional; therefore, some instructors may choose not to use them.

Grade	Honor Points per Credit Hour	Grade	Honor Points per Credit Hour
A.....	4.00	D.....	1.00
A-.....	3.67	D-.....	0.67
B+.....	3.33	E.....	0.00
B.....	3.00	I.....	Incomplete
B-.....	2.67	V.....	Audit
C+.....	2.33	W..	Student Initiated Drop
C.....	2.00	WP...	Withdraw–Passing
C-.....	1.67	WF...	Withdraw–Failing
D+.....	1.33	NS.....	No Show

Grade Point Average (GPA) Calculation

The number of credit hours granted for a grade of “E” or higher is indicated in the description for each course. Each hour of credit is valued in honor points according to the grade received. I, W, WP, WF, and NS grades are not included in the grade point average calculations.

To determine grade point average, multiply the number of honor points of each grade received by the number of hours of credit for that course, then divide the total number of honor points by the total number of credit hours earned.

Students are advised that many colleges and universities compute grade point average differently. Upon transfer to one of these institutions, the student’s grade point average might be recomputed and thus be lower than the GRCC grade point average.

Students are reminded that a 2.0 grade point average is required for graduation from Grand Rapids Community College.

No A, B, C, D, or E grade can be converted into a W, WP, WF, or NS grade after the end of the semester during which the grade was earned unless an error occurred.

Audit (V Grade)

Students may choose to receive a grade of “audit” for classes in which they enroll. Students may audit a class for enjoyment, for personal exploration, for gaining insight into a new subject, or for other reasons. **Audit status does not count toward full-time enrollment.** The course will appear on the student’s transcript.

Students pay full tuition for classes they audit and are expected to participate in all class activities. However, they are not compelled to take tests or examinations or to write term papers, but they may do so voluntarily.

Students must declare their audit status to their instructors during the first 25% of the class. Credit status may not be changed to audit status after this time limitation. Students may make arrangements on an individual basis with their instructors to change from audit to credit status. If they expect to do so, they must take all tests and examinations and write all assigned papers.

Withdrawal Process (W, WP, WF or NS Grade)

The “withdrawal” process is used to correct enrollment problems or because of unexpected or unusual events of catastrophic impact. Students must initiate all drops. A student may drop a class and

receive a “W” until the date of 70% of class completion, as noted on the instructor’s class roster. WP, WF, or NS may be assigned by instructors when grading students, but instructors may not assign a “W” as a grade. The student may continue to attend the class, upon agreement with the instructor. There is no penalty to the student receiving a WP, WF, or NS in the Grand Rapids Community College grading system. Students will not be able to initiate a drop during the final 30% of the class, and students will receive the grades they have earned (A, B, C, D, E, WP, WF, NS) based upon graded and missed work.

Incomplete Grades (I Grade)

A student may request an “I” (Incomplete) from an instructor. The “I” will be assigned only when the student: (a) has completed at least 90% of the class but is unable to complete the class work and/or take the final examination because of extraordinarily unusual or unforeseen circumstances or other compelling reasons; and (b) has done satisfactory work in the course; and (c) in the instructor’s judgment, can complete the required work without repeating the course.

1. If these conditions are met, the instructor electing to give an “I” will complete an Incomplete Grade Form at the time course grades are due. This form will indicate actions the student will undertake to finish the course, when those actions will take place, and the grade to be given (A, B, C, D, E) should the work not be completed. Both the student and the instructor will sign the form. Copies will be provided to the Registrar, the student, and the instructor.
2. All incomplete course work will be finished by the date indicated on the Incomplete Grade Form, but not to exceed one calendar year.
3. If the student is not satisfied with the decision of the instructor, or in the event of further unforeseen, extreme or unusual circumstances, a written appeal for an extension can be made to the Dean or Assistant Dean of the School.

Grade Reports

Grade reports are available to the student at the end of each semester and at the end of the Summer Session and are accessible through the Web site: www.grcc.edu. Students needing assistance accessing their grades may contact the Registrar’s Office. Grades will be mailed only upon request. Grades, records, transcripts, and diplomas will not be distributed to students who have unpaid financial obligations to the College.

Satisfactory Performance

Students are expected to achieve at least minimal academic success in their studies at Grand Rapids Community College. Students who do not achieve satisfactory grades may be dismissed after appropriate committee consideration.

Course Repetition

Students may repeat courses. Both the original course grade and the repeated course grade are entered upon the student’s permanent record. Credit hours for graduation are recorded only once. If a student repeats a course, the transcript will show both grades but for GPA computation will use only the credits and grade points associated with the higher grade.

Class Attendance Rules

The faculty and administration of Grand Rapids Community College believe that regular attendance and participation in classes are essential for the education of every student.

We also recognize that circumstances sometimes prevent students from attending classes regularly. However, the College administration sees excessive absenteeism as a very serious matter.

Specific consequences of such absences are determined by individual instructors, departments, and Schools. The following rules, however, do apply across the College:

1. **All** instructors must inform students, *in writing*, in each class that they teach, of the exact attendance requirements and the consequences of not meeting them. Such notice should be delivered at the first meeting of each class.
2. Students should make arrangements with their instructors for making up missed class work *in advance of an absence* whenever it is possible to do so.
3. The College faculty and administration expect that individual faculty members will recognize that athletic events, class trips, trips abroad, student organization activities, and the like are a necessary and desirable part of life at GRCC and that all faculty members will extend to each other the professional courtesy of permitting students to miss their classes as these activities dictate. Students must understand, nevertheless, that they are responsible for **all** class work missed under such circumstances.
4. The College makes no distinction between “excused” and “unexcused” absences. If students are not present in a class in which they are enrolled, they are simply absent, regardless of the reason.

Academic Honesty

Grand Rapids Community College holds to high ideals of academic and personal honesty and expects every student to do likewise. Dishonest acts like cheating, lying, and plagiarism will not be tolerated.

The policy of the College is such that each instructor and/or department shall create classroom policies for dealing with academic dishonesty which will best help the offenders. The Student Academic Grievance Procedure may be used by students who feel they have been treated unfairly.

NOTE: For information on the Grand Rapids Community College (GRCC) student rights, responsibilities, Student Conduct Policy, and the GRCC Student Code of Conduct, please consult the GRCC Student Handbook, available in the Student Activities Office.

ACADEMIC POLICIES AND PROCEDURES

NOTIFICATION TO STUDENTS OF RIGHTS UNDER FERPA

The Family Educational Rights and Privacy Act (FERPA) affords students certain rights with respect to their educational records. They are:

- The right to inspect and review the student's education records within 45 days of the day the College receives a request for access. Students should submit to the Registrar written requests that identify the record(s) they wish to inspect. The College will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the College official to whom the request was submitted, that official shall advise the student of the correct official to whom the request should be addressed.
- The right to request the amendment of the student's education record that the student believes is inaccurate or misleading. Students may ask the College to amend a record that they believe is inaccurate or misleading. The student should write the College official responsible for the record, clearly identify the part of the record he or she wants changed, and specify why it is inaccurate or misleading. If the College decides not to amend the record as requested by the student, the College will notify the student of the decision and advise the student of his or her right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when notified of the right to a hearing.
- The right to consent to disclosures of personally identifiable information contained in the student's education records except to the extent that FERPA authorizes disclosure without consent. One exception, which permits disclosure without consent, is disclosure to school officials with legitimate educational interests. A school official is a person employed by the College in an administrative, supervisory, academic, research, or support staff position (including law enforcement unit personnel and health staff); a person or company with whom the College has contracted (such as an attorney, auditor, or collection agency); a person serving on the Board of Trustees; or a student serving on an official committee, such as a disciplinary or grievance committee, or assisting another school official in performing his or her tasks. A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibility as determined by the Provost.
- The right to file a complaint with the U.S. Department of Education concerning alleged failures by Grand Rapids Community College to comply with the requirements of FERPA. The name and address of the Office that administers FERPA is:
 Family Policy Compliance Office
 U.S. Department of Education
 400 Maryland Avenue SW
 Washington, DC 20202-4605

Directory Information is information not generally considered harmful or an invasion of privacy if disclosed. It includes:

- Name, address, telephone listing, e-mail address
- Student status: Part-time/full-time; freshman/sophomore
- Major field of study
- Weight and height of athletes
- Most recent previous school attended
- Photographs
- Date and place of birth
- Participation in officially recognized activities and sports
- Dates of attendance, degrees, date of graduation and awards

Directory Information does not include student identification numbers, social security numbers or other personally identifiable information.

Stop Form for Information Release

The College may release Directory Information to other educational institutions about students who are on the graduation list. Students who do not wish this information released must fill out the Directory Information STOP Card. This card must be filled out by February 1 of the year in which the student intends to graduate (see FERPA).

Reporting Requirements

In order to improve the instruction offered at Grand Rapids Community College and to meet the requirements of the Carl D. Perkins Vocational and Technical Education Act, Section 113, and the Workforce Investment Act of 1998, Section 122, GRCC may use a student's Social Security number in order to compile summary reports as mandated by these acts.

Transcript Requests

Students desiring transcripts of their permanent record should file a Transcript Request form, available at the service window of the Registrar's Office or on-line at www.grcc.edu; or they may write to the Registrar's Office giving dates of attendance, social security number or student ID number, date of graduation, and all names under which they may have enrolled and the student's signature. All requests should be made two weeks in advance of the time they are needed.

STUDENT RIGHT TO KNOW

Grand Rapids Community College is pleased to provide the following information regarding the institution's graduation/completion and transfer-out rates. The information is provided in compliance with the Higher Education Act of 1965, as amended. The rates reflect the graduation, completion and transfer-out status of students who enrolled during the 1998-99 school year and for whom 150 percent of the normal time-to-completion had elapsed.

During the Fall Semester of 1998, 1,727 first-time, full-time, certificate- or degree-seeking undergraduate students entered Grand Rapids Community College. After three years (i.e., as of August 31, 2001), 17.9 percent (309) of these students had graduated from GRCC or completed their programs and 10.3 percent (177) had transferred to other higher education institutions.

When reviewing this information, readers should be aware of the following:

- Graduation and transfer-out rates are based on a 3-year period of attendance for two-year programs and 1¹/₂ years for one-year programs; of the many programs offered at GRCC, none is longer than two years.
- Graduation and transfer-out rates do not include students who left the school to serve in the armed forces, on official church missions, or in the foreign service of the federal government. Students who died or were totally and permanently disabled are also excluded.
- The remaining 1,238 students are either still attending GRCC, have transferred to an institution not reporting, or have discontinued their education.
- Transfer-out information was not originally reported in the Graduation Rate report sent to the National Center for Educational Statistics. Since then, the College has contracted with the National Student Clearinghouse's Enrollment Search program to capture a majority of students transferring from GRCC.

Questions related to this report should be directed to:

Information Analyst
Institutional Research and Planning
Phone: (616) 234-4048

Campus Crime Report

The Campus Crime Report for the last year reported is available at the Campus Police Office, Dean of Student Affairs Office, and Public Relations Office.

Concealed Weapons Policy

In order to provide a safe environment for employees, students, customers, visitors and the general public, the carrying of weapons, whether open or concealed, is prohibited on College property. The only individuals allowed to carry a firearm are law enforcement officers who are lawfully carrying weapons in the course of their duties as law enforcement officials. Additional information regarding the carrying of weapons can be located in the Student Handbook, page 79, under the heading "Student Code of Conduct." The Grand Rapids Community College Policy on Concealed Weapons is also available for review.

AFFIRMATIVE ACTION, EQUAL EMPLOYMENT OPPORTUNITY, AND AMERICANS WITH DISABILITIES ACT

The Labor Relations Office articulates the needs and concerns of groups of students, faculty, and staff at GRCC. This office serves as a liaison between students, faculty, staff, and administrators to identify and isolate barriers that prevent equity in academic, vocational, and social opportunities for African Americans, Hispanics, Native Americans, Asians, females, and physically challenged individuals. The primary aim is to implement positive action programs to create an environment that enhances success.

Non-Student or Non-Employee

Applicants, non-students, and non-employees shall bring their complaints directly to the attention of the Director of Human Resources/Labor Relations & EEO. These complaints must be in writing. If the applicant, non-student, or non-employee is not satisfied with the response of the Director of Human Resources/Labor Relations & EEO, he/she may appeal in writing and within five (5) school days* directly to the President or his/her designee. All decisions at this level are final and binding.

Student Discrimination Grievance Procedures

Authority:

- Title IX of the Higher Education Amendment of 1972 prohibits discrimination against students on the basis of sex.
- Titles VI and VII of the Civil Rights Act of 1964 prohibit discrimination on the part of institutions on the basis of race, color, religion, national origin, sex, sexual orientation, political persuasion, age, weight, height, disability or marital status, including denial or difficulty of any aid benefits or service; segregation or separate treatment relating to the receipt of service, financial aid, or other benefits.

Grievance Procedure:

The following grievance procedure shall be followed if any of the above rights are perceived to have been violated.

1. Complaints or questions by students regarding possible internal discrimination or sexual harassment shall be in writing and delivered to the Dean of Student Affairs or the Director of Human Resources/Labor Relations & EEO within five (5) school days* of the alleged incident.
2. The office receiving the complaint shall inform the appropriate Dean and Department Head/Program Director, or the Administrator of the unit, who shall discuss the incident with the student and the person charged and seek to resolve the matter within five (5) school days* after the complaint. Every effort shall be made to resolve the incident at this level.
3. If no resolution is reached, the student may file a formal grievance with the Director of Human Resources/Labor Relations & EEO within ten (10) school days* after the discussion of the incident. Forms are available from the Director of Human Resources/Labor Relations & EEO.
4. The Director of Human Resources/Labor Relations & EEO will conduct an investigation and present findings to the College's Affirmative Action Committee within fifteen (15) school days* of the formal written grievance.
5. The College's Affirmative Action Committee shall consist of the following personnel:
 - a. Director of Human Resources/Labor Relations & EEO of Grand Rapids Community College; that person shall act as Chairperson of the Committee.
 - b. One member of the GRCC faculty shall be designated by the Director of Human Resources/Labor Relations & EEO from two recommendations by the President of the Faculty Association.
 - c. One member of the GRCC student body shall be designated by the Director of Human Resources/Labor Relations & EEO from two recommendations by the President of the Student Congress.

- d. The President of the College shall select one administrator as a member of the committee.
 - e. The President of the College shall designate two appointees to serve on the committee.
 - f. The committee members will be appointed for one-year terms and may be reappointed.
6. The Affirmative Action Committee shall forward its written recommendations and findings to the President of the College.
 7. The President of the College shall respond to the Committee's recommendations in writing within fifteen (15) school days*. The decision of the President shall be final.
 8. The student will be notified of the recommendations and findings within five (5) school days* of the decision.

* *School days are Monday through Friday excluding days when the College is not in session.*

Americans with Disabilities Act Discrimination Procedures

The Americans with Disabilities Act of 1990 (ADA) and Section 504 of the Rehabilitation Act of 1973 prohibit discrimination with respect to individuals with disabilities. Any student, non-employee or non-staff who believes he or she has been discriminated against on the basis of disability should immediately bring the problem to the attention of the person(s) so designated under this procedure.

Student

Students shall bring the complaint to the attention of the Coordinator of the Disability Support Services. If it cannot be resolved at this level, the student shall file a formal complaint, in writing and within five (5) school days*, with the Director of Human Resources/Labor Relations & EEO. If the student is not satisfied with the decision of the Director of Human Resources/Labor Relations & EEO, he/she may appeal to a Hearing Officer designated by the President. The appeal must be in writing and within five (5) school days* of the decision of the Director of Human Resources/Labor Relations & EEO. A final appeal is available if made in writing and within five (5) school days* of the decision of the Hearing Officer directly to the President or his/her designee. All decisions at this level are final and binding.

No student, applicant, employee, non-employee or non-staff will be subject to coercion, intimidation, interference, retaliation or discrimination for registering a complaint or for assisting in an investigation of any alleged violation of laws prohibiting discrimination on the basis of disability.

ADA Coordinators

The following coordinators have been designated to carry out responsibilities under the ADA:

1. Disability Support Services Coordinator, 3rd floor of the Student Center, Room 368, (616) 234-4142.
2. Director of Human Resources/Labor Relations & EEO, 404B College Park Plaza, (616) 234-3972.
3. Director of Facilities, 225 Bostwick NE, (616) 234-3950.

STUDENT ACADEMIC GRIEVANCE PROCEDURE

Purpose: To resolve a grade dispute between a student and an instructor in a timely manner with academic integrity.

A student's final grade in a course is the sum of the individual grades received during the course. A student who perceives a grade to be unfair shall use the grievance procedure as follows:

1. The student shall notify the instructor within 15 days after the receipt of a perceived unfair grade to resolve the matter informally.
2. Should the student feel that any issue is not resolved, he/she may take the issue to the Department Head or Program Director within five (5) school days* for resolution.
3. Any issue(s) not resolved at Step 2 may be taken in writing to the Dean (the Dean may assign the case to the Assistant Dean) of the School responsible for the course within five (5) school days* of Step 2 response. The Dean who hears the case will be referred to as the Hearing Dean. The Hearing Dean shall appoint an ad hoc Grade Appeal Committee consisting of three (3) faculty members within the discipline and/or knowledgeable of the subject matter and one (1) student. The appointed faculty chairperson shall convene the committee within seven (7) school days* of the Hearing Dean's receipt of the grievance. If either the student or instructor fails to appear before the Grade Appeal Committee, the committee shall make its recommendation based upon the information presented at the hearing.
4. The Grade Appeal Committee will present its written recommendation to the student, instructor, and Hearing Dean of the case within five (5) school days* of the hearing. If either party is not satisfied with the Committee's Decision, that party shall request a meeting with the Hearing Dean, and the Hearing Dean will review the case. The Hearing Dean shall provide a written ruling to the instructor and the student within five (5) school days* of receiving the Grade Appeal Recommendation or five (5) school days* of reviewing the case. The decision of the Hearing Dean is final.
5. The Hearing Dean who rules in favor of the student shall do one of the following:
 - a. If the grade dispute is resolved during the semester, the Hearing Dean shall direct the instructor to change the student's grade in accordance with the ruling, and the student will be treated without prejudice. The Hearing Dean will monitor instructor compliance through record examination and/or student input. If the final grade is given and the instructor fails to comply, the Hearing Dean shall submit a Change of Grade Form to the Registrar, and the Registrar will change the student grade as indicated.
 - b. If the grade dispute is resolved after a final grade is given, the Hearing Dean shall submit a Change of Grade Form to the Registrar, and the Registrar shall change the student grade as indicated.

* *School days are Monday through Friday excluding days when the College is not in session.*

DISCIPLINE GRIEVANCE PROCEDURE

Rules #8.7 Discipline Unrest

The Dean of Student Affairs handles matters that require disciplinary action at Grand Rapids Community College. All students at the College are guaranteed due process (as defined below) in disciplinary matters. When a student has been charged with misconduct or an infraction of the College rules, the Dean of Student Affairs will confer with the student charged. The student will be informed of his/her right to have an advisor present during this conference. Pending action by the Dean on the charges, the status of a student will not be altered, nor will his/her right to be present on the campus and to attend classes be suspended, except for reasons relating to the safety and/or well being of other GRCC students, employees or property. The Dean shall be the person to make the decision to suspend with regard to safety or property. (See GRCC Student Code of Conduct.)

Disciplinary actions taken by the Dean toward a student found responsible for misconduct or a violation of College rules may include, but are not limited to, one or more of the following: A) Oral warning; B) Written warning; C) Reprimand; D) Social probation; E) Counseling assessment; F) Requirement of restitution; G) Community service; H) Suspension from College; and/or I) Dismissal from College.

Due process requires that the Dean notify the student in writing of the disciplinary action to be taken within five (5) school days* of their final conference.

Discipline Grievance Procedure

When misconduct results in a penalty and the student desires an independent review of the disciplinary action, the student, upon written request to the Dean of Student Affairs, may be granted a private hearing before a Hearing Committee. The request for the Hearing must be made within five (5) school days* following the Dean's written notification of discipline to the student.

The Hearing Committee will consist of the following seven (7) personnel: 1) A member of the administrative staff, who has been appointed by the President and who shall chair the committee; 2) a member of the College staff appointed by the College President; 3) a member of the faculty appointed by the President of the Faculty Association; 4) a student representative appointed by the Chairperson of the Council for Minority Concerns; 5) the President of Student Congress; and 6) two (2) diverse student representatives appointed by the President of Student Congress. The student shall receive the Hearing notice by first-class mail with a return receipt requested.

The student shall be given written notice of the time, date and place of the hearing, the reason for suspension or expulsion, a list of potential witnesses unless to do so would compromise their safety, and notice of the nature of the evidence.

Discipline Hearings

Unless the law requires, the hearings are not open to the public. The hearings must begin within ten (10) school days* of the student's request and proceed as promptly as possible. (The ten days may be extended by either the College or student upon mutual agreement.) The student may attend the hearing and present evidence and witnesses, and hear and question witnesses.

For the Hearing, a student is entitled to be accompanied by one advisor. The advisor may be any individual of the student's choice. The student may choose to have an attorney as his/her advisor, but it shall be at his/her expense and provided that at least 24 hours' prior written notification is delivered to the Hearing Committee Chairperson. The student's attorney or advisor shall have no role at the Hearing other than to advise the student. The advisor shall not be permitted to ask or answer questions or to make oral arguments. Questions from the student to witnesses will be directed through the Hearing Committee Chairperson. The student's unwillingness to answer questions regarding the incident will not be held against the student. A record of the Hearing shall be made by a tape recorder and kept until the appeal procedures have been completed. No other recording devices will be allowed. A police officer will attend the hearing.

The decision of the Hearing Committee will be based solely upon matters introduced into evidence during the Hearing. A vote of four Committee members will be considered a majority decision and will be presented in writing to the student no later than five (5) school days* after the conclusion of the Hearing. The Committee shall provide input on the content of the letter.

The student may appeal the Hearing Committee's decision in writing to the Provost/Vice President of Academic and Student Affairs of the College within five (5) school days* of receiving it.

After reviewing the Hearing Committee's written decision, the Provost/Vice President of Academic and Student Affairs shall have five (5) school days* to render a written decision to the student. The Provost/Vice President's decision shall be final, binding and mailed to the student by first class mail.

NOTE: Students under 18 years of age who are involved in acts of violence, drugs, alcohol or sexual assault violations may have their parents notified by the College Official.

* *School days are Monday through Friday excluding days when the College is not in session.*

Smoking Policy

The Board of Trustees recognizes the inherent dangers in smoking, yet the campus population is diverse, requiring considerations of personal needs and values. In the interest of providing a safe and healthy environment for students, staff and visitors, and in accordance with the Michigan Clean Air Act (*P.A. 198 of 1986*), the Board of Trustees adopted the following policy on smoking: *Smoking is prohibited throughout GRCC facilities except in designated smoking areas identified by signs.*

Consumer Information

Consumer Information may be obtained through the Public Relations Office, Suite 503, College Park Plaza Building.

RESOURCES

APPLIED TECHNOLOGY CENTER (ATC)

ATC Information Office (616) 234-3600

- Business and Technical Training
- Computer Applications Department
- Drafting and Design Department
- Ferris State University - Grand Rapids
- Hospitality Education Department
- Manufacturing Department
- Job Training
- Workbased Learning–Apprenticeship Program

The ATC is a comprehensive resource dedicated to providing direct assistance to area businesses and industry. For over a decade, the ATC has serviced West Michigan companies. Through credit courses, customized training, seminars and other events, the ATC serves approximately 11,000 individuals each week.

The Applied Technology Center (ATC) is a joint partnership between Grand Rapids Community College (GRCC) and Ferris State University (FSU).

ATC Conference Services (616) 234-3715

The ATC Conference Services averages 75 special events each week, with attendance of approximately 1,500 persons. These activities include professional organizations and user group functions, FSU and GRCC events, business customer training and meetings, workshops and agency groups. ATC Conference Services include:

- Meeting/Event Space
- Food and Beverages
- Teleconferencing
- Audio and Visual Equipment

BOOKSTORE

(616) 234-3880

The GRCC Bookstore is located in the Student Community Center at 122 Lyon Street NE. The Bookstore's hours vary throughout the year. Call (616) 234-3880 for current hours or visit the Bookstore Web site at www.grcc.bkstr.com for hours, featured products and textbook information.

The GRCC Bookstore buys books from students every business day.

COMMUNICATIONS

(616) 234-3960

Graphic Services, located on level G1 of the Main Building, has two primary service components: publications and signs/displays. In both areas, graphic designers use advanced computerized equipment to design and produce camera-ready artwork for print production as well as to create final-form display items. Call (616) 234-3960.

Printing Services, located on level G1 of the Main Building, provides copying and printing services for GRCC students. Copiers for student use are available in several buildings across campus. Services include simple and full-color copying, single and multicolor offset printing, and complete finishing. Call (616) 234-3960 for printing estimates.

E-MAIL FOR STUDENTS

Computer accounts are available to all GRCC students. A GRCC computer account will provide the student with e-mail and access to the Internet, allowing him or her to send and receive e-mail and use the World Wide Web as a research tool. Interested students may sign up at any GRCC computer lab. **Students must be registered for at least one credit hour to be eligible for this service.**

FORD FIELDHOUSE

(616) 234-3880

The Gerald R. Ford Health and Physical Education Center includes a 4,000-seat main fieldhouse with basketball, tennis, volleyball, and badminton courts. The space can be used for golf, archery, baseball practice, and track events. There is a wrestling room, weight-lifting room, dance floor, and a T-shaped swimming pool for diving and swimming competition. Six courts are designed for racquetball.

INSTRUCTIONAL LABS

The College has equipped a number of laboratories in the following areas:

- **Art**
- **Biological Sciences**
 - Anatomy and Physiology
 - Biology
 - Botany
 - Microbiology
 - Zoology
- **Business**
 - Computerized Accounting
 - Fashion (Textiles)
 - Interior Design
 - Microcomputers
 - Word Processing/Keyboarding
- **Computer Applications**
 - General Applications
 - Graphics
 - Microcomputers: IBM, Macintosh
 - Networking
 - Programming
- **Hospitality Education**
 - Bakery/Pastry Kitchens
 - Banquet Rooms
 - Beverage Management
 - Deli-Bakery "Art and Bev's"
 - Demonstration Kitchen
 - Dining Rooms (The Heritage Restaurant)
 - Hospitality Lending Library
 - Production Kitchens

- Storerooms
- Sugar/Chocolate Kitchen
- **Engineering**
- **Health**
 - Dental Programs
 - Health Programs (Activity Lab)
 - Laboratory Pre-School (Child Care)
 - Nursing Programs
 - Occupational Therapy Assistant Programs
 - Radiologic Technology Program
- **Health and Wellness**
- **Fashion Display**
- **Language Arts**
 - Computer Laboratory
 - Language Learning
 - Reading-Writing Lab
- **Music**
 - Cassette Tape Listening Units
 - Electronic Pianos
 - Electronic Synthesizer
 - MIDI Workstations
 - Tone Production Computers
 - Recording Facilities
- **Physical Sciences**
 - Astronomy
 - Chemistry
 - Geology
 - Physics
- **Photography Darkroom and Studios**
- **Criminal Justice**
 - Law Enforcement (Police Academy)
- **Reading**
- **Technology**
 - Air Conditioning, Heating and Refrigeration
 - Automated Manufacturing
 - Automotive Technology
 - Computer Aided Design (CAD)
 - Computer Aided Manufacturing (CAM)
 - Computer Integrated Manufacturing (CIM)
 - Computer Numerical Control (CNC)
 - Computer Technology and Repair
 - Drafting
 - Electronics
 - Hydraulics
 - Quality Science Lab
 - Plastics and Injection Molding
 - Robotics
 - Welding
- **Occupational Training**
 - Auto Body Repair and Industrial Painting
 - Auto Mechanics
 - Computer Aided Design (CAD)
 - Computer Applications
 - Furniture Finishing
 - Furniture Manufacturing
 - Machine Tool Operation
 - Maintenance Mechanics
 - Welding

JOB PLACEMENT OFFICE

(616) 234-4170

The GRCC Job Placement Center offers assistance for employment needs. All services are provided free to currently enrolled students and alumni. The staff provides a variety of personalized services to address numerous kinds of employment needs. Services include:

- Employment opportunities of various jobs within the community
- Applicant interviewing and referral
- Resume and Interview Seminar
- Resume critique
- On-campus recruiting for employers
- Teaching job hunting skills
- Viewing job listings on the Internet
- Computer workstations for resume and cover letter development
- On-campus employment opportunities (current students only)

The Job Placement Center is located in the Main Building, Room 103, and is open Monday-Friday 8 a.m. to 5 p.m.

LIBRARY SERVICES

(616) 234-3870 for Library Hours

(616) 234-3868 for Reference Help

The GRCC Library is located in the Learning Center, 140 Ransom NE.

FIRST FLOOR of the GRCC Library houses:

- The GRCC Library print Reference Collection (5,100+ volumes);
- The Reference and Circulation desks;
- The Reserved Reading collection;
- 36 terminals to access the Library home page (the GRCC automated Library catalog, over 60 licensed electronic databases and indexes with access to over 5,000 full-text journals, and over 10,000 electronic books);
- Audiovisual equipment for listening to music and language CDs and audiocassette tapes and for watching telecourses and other videos;
- Typewriters;
- Duplication of non-copyrighted audiocassette tapes;
- New book display;
- Book/magazine sale display.

SECOND FLOOR of the Library houses:

- The print circulating book collection (67,000 volumes);
- The print periodical collection (over 800 titles);
- Interlibrary loan office;
- Information Literacy training room;
- 10 computer terminals with access to GRCC Library holdings.

Copy machines and individual and group study areas are located on each floor. AVISS (Audio Visual Instructional Support Services) supports classroom use of AV equipment and houses the Student Project Production Center with camcorders and two

video editing suites for student projects. Call (616) 234-3866 to reserve a suite.

Library staff members offer Information Skills classes several times during each semester. Call the Reference desk, (616) 234-3868, to sign up for a class on how to find, use, and evaluate print, film, or electronic information.

GRCC Library Hours:

Summer Session

Wednesday and Thursday	8:00 a.m.-8:00 p.m.
Monday, Tuesday, and Friday	8:00 a.m.-5:00 p.m.

Fall and Winter Semesters

Monday-Thursday	7:30 a.m.-9:45 p.m.
Friday	7:30 a.m.-5:00 p.m.
Saturday	10:00 a.m.-2:00 p.m.
Sunday	1:00 p.m.-5:00 p.m.

Hours vary during holidays and College breaks.

Call (616) 234-3870 or visit the Library's home page to verify hours: www.grcc.edu/library.

MEDIA TECHNOLOGIES

(616) 234-3830

Media Technologies provides television production services to GRCC faculty and staff. The engineering staff also provides technical services for teleconferencing, distance learning, and media events. Call (616) 234-3830.

Television Services is located in the Learning Resource Center. Services include a television studio, multimedia production, Web page design, videotape duplication, and two cable television channels. The College telecourse checkout program, "Mindbuster Video," is located in the Learning Resource Center at the Media Technologies window off the main lobby. Texas Instruments graphing calculators are also available for checkout. Television Services also manages six distance-learning classrooms located on and off campus. These rooms are used for regular classes as well as for staff development and business teleconference activities.

Engineering Services, located in the Learning Resource Center, provides technical support for television production, broadcasting, and duplication as well as all distance systems. The staff is also responsible for the design, maintenance and support of classroom multimedia systems as well as sound and video systems located in larger rooms/auditoriums. In most cases, equipment is installed, repaired, and maintained by one of the full-time engineering staff.

STUDENT ACTIVITIES OFFICE

(616) 234-4160

The Student Activities Office, located on the first floor of the Student Community Center, provides student services as well as educational and cultural programming for GRCC students. The staff answers questions, provides information about the College, and works closely with the College's student organizations. Services include:

- Student Identification Cards
- Campus locker rentals
- Ticket outlet for campus and community events
- Daily and monthly bus passes from Interurban Transit Partnership
- *This Week @ GRCC*
- GRCC Student Handbook/Planner
- Voter registration
- Campus Orientation and information
- Free DASH parking
- Area rental housing listing
- Student organization information
- FAX and copy services
- Campus leadership opportunities

GRCC SAO Hours*:

Monday-Thursday 8:00 a.m.-6:00 p.m.

Friday 8:00 a.m.-5:00 p.m.

* Hours are expanded during peak times.

Register to Vote

To use your constitutional right to vote in city, state, and national elections, you must be registered. You may register at the Student Activities Office, on the first floor of the Student Community Center.

Call (616) 234-4160 for more information.

Student Question Hotline: (616) 234-4116.

SERVICE-LEARNING CENTER

(616) 234-4162

Located on G2 Main Building, Room 59

The Service-Learning Center offers:

- Integrated service-learning options within academic courses. (Some courses carry academic service-learning options. Please check with the Service-Learning Center or individual departments for the names of instructors who offer this experience.)
- Organized, intentional experiences that meet community needs
- Service hours recorded on academic transcript
- Faculty development
- Faculty Scholars Program

Opportunities for service projects within the community:

- Make A Difference
- Partnership with local elementary schools
- Alternative Break Trips
- Service-Learning Advisory Board (SLAB)

GRCC Service-Learning Center Hours:

Monday-Thursday 8:00 a.m.-6:00 p.m.

Friday 8:00 a.m.-3:00 p.m.

SPECIAL PROGRAMS FOR STUDENTS**ATHLETICS**

GRCC is a member of the National Junior College Athletic Association (NJCAA) and participates in sports for men and women. These sports include national, regional, and state competition in football, basketball, baseball, golf, tennis, volleyball, and softball. Since GRCC is the only community college playing football in Michigan, its football schedule includes various out-of-state competitors and members of the NJCAA.

Equity in Athletics

The Equity in Athletics Report is available in the Athletics, Public Relations, and Human Resources departments as well as the office of the Executive Vice President for Business and Financial Services.

BUSINESS & TECHNICAL TRAINING**For the Business Community**

(616) 234-3600

Business & Technical Training (B&TT) serves its customers by providing cost-effective, results-oriented workforce training and service.

Training programs are developed to meet individual employer needs identified through assessment and corporate learning plans. B&TT offers training through a variety of learning methodologies: distance learning (with or without an instructor) and hands-on technical instruction—for credit and non-credit. Classes are held on site or at the College.

Business & Technical Training provides services in areas such as the following:

- **Pre-Employment Training Assessment**
- **Employee Skill and Job Assessment**
- **Microcomputer Skills Development** - Internet Explorer; Netscape Communication; keyboarding; all levels of Access, Excel, Outlook, Word, and PowerPoint; Windows 95, 98, and 2000; and Word Perfect.
- **CAD/CAM Skills Development** - 3D Studio Max and VIZ; all levels and applications of AutoCAD, AutoLISP Programming, CAD, CADKEY; Mechanical Desktop; Architectural Desktop; Parametric Design; and Reference Files. B&TT offers many classes in the area of Quality and CAD/CAM to the general public. For a newsletter or more information call the Applied Technology Center at (616) 234-3600.
- **Quality Skills Development** - APQP, DOE, FEMA, GD & T, all applications of ISO and QS, Mistake Proofing/Zero Defect, MSA, PPAP, Process Capabilities Analysis, QFD, Quality Management System Documentation, Reliability Analysis and Maintainability, SPC, and Metrology and Calibration.
- **Manufacturing Skills Development** - plastics, robotics, machine tool shop, math, blueprint reading, welding, sheet metal, and injection.

- **Organizational Skills Development** - business plans, strategic plans, project management, manufacturing principles, workplace organization, train the trainer, team building, customer service, supervisory and leadership training, problem solving, and communications.

For more information regarding customized classes, call the Business & Technical Training Office at (616) 234-3600 or visit [www.grcc.edu/Business Services](http://www.grcc.edu/Business_Services).

CAREER PATHWAYS

(616) 234-3377

Career Pathways is a systematic program designed to provide a focused, seamless transition from high school to college to work as students prepare for successful careers in a changing work world. Career Pathways is a model that helps students envision their future work and achieve their career goals. The program provides opportunities, services, and support based on a student's career choice. Career Pathways combines academic participation and meaningful work-based experiences to enable students to succeed in advanced training and lifelong learning.

Kent Metropolitan Articulation Project (K-MAP)

Kent Metropolitan Articulation Project high school graduates may enter Grand Rapids Community College with advanced standing credit. Graduates of the following "articulated" high school and skill center programs can receive from two (2) to eleven (11) credits toward an associate's degree or certificate (upon successful completion of the job skills requirements in secondary schools that are members of the Kent Metropolitan Articulation Project): Accounting, Auto Mechanics, Drafting, CAD, Food Service, Computer Applications, Machine Tools, Nursing Assistant, Office Education, and Welding. Interested students should submit an advanced credit application, which can be obtained from Grand Rapids Community College or from the student's high school or skill center. For more information about K-MAP, call the Career Pathways Office at (616) 234-3377 or check the Grand Rapids Community College Web site: www.grcc.edu (click on departments, career pathways, and then articulation).

THE DIVERSITY LEARNING CENTER (DLC)

(616) 234-3390

The mission of the GRCC Diversity Learning Center is to ensure an inclusive and flexible learning environment in support of personal growth and respect for individual differences. The Diversity Learning Center embraces and promotes the celebration of human differences through its programs and activities. It meets the needs of the GRCC community by institutionalizing diversity. The Center is a major resource for bringing people together and linking the campus community.

The Diversity Learning Center is dedicated to implementing educational and cultural programs for students, staff, and community that improve campus climate, enhance employee relation-

ships, and strengthen community relations. It provides individuals with a safe place for acquiring the knowledge and skills needed to meet the challenges and enrichment of school, work, and living in a diverse and multicultural world.

Ferris State University– Grand Rapids

(616) 451-4777

A unique partnership between Ferris State University and Grand Rapids Community College enables a student to transfer a complete associate's degree into one of 15 bachelor's degree programs or move effortlessly into a Professional Development Certificate program. Skills will be honed on state-of-the-art equipment and materials in the Applied Technology Center, in small classes led by instructors with contemporary field knowledge. The student can complete 100 percent of his/her course work for a bachelor's or even a master's degree without leaving Grand Rapids and without disrupting either career or personal life.

This partnership allows the student to:

- Take classes right in his/her own backyard. All of the classes are held at the Applied Technology Center (ATC) or at Ferris facilities located at 17 Fountain Street NE, just two blocks west of the ATC.
- Learn to do what he/she loves. Ferris' approach is hands-on, so students learn by doing and take what they've learned to work with them the next day.
- Learn in small classes. Students receive the individual attention they deserve from Ferris faculty, not graduate assistants.
- Get the job he/she wants. Ferris State University has one of the highest job placement rates in Michigan—97 percent of graduates find jobs in the field of their choice.

Bachelor's Degree Partnered Programs:

- Allied Health Education
- Business Administration
- Computer Information Systems
- Construction Management
- Criminal Justice
- Elementary Education
- Environmental Health and Safety
- Secondary Education
- Health Care Systems Administration
- Industrial Technology and Management
- Nursing
- Manufacturing Engineering Technology
- Product Design Engineering Technology
- Quality Engineering Technology
- Technical Education

Associate's Degree Programs

- Environmental Health and Safety Technology
- Medical Records Technology

Professional Development Certificate Programs

- Advanced Construction Management
- Construction Administration
- Safety Management
- Occupational Health & Safety

- Facilities Management
- Quality Technology
- Billing & Coding
- Global Logistics
- International Business
- iseries (AS/400)

Master's Degree Programs

- Information Systems Management
- Career and Technical Education
- Curriculum and Instruction
- Criminal Justice Administration

One Convenient Location

With the partnered programs, students continue to take some course work with GRCC after they've started a bachelor's degree. This makes completing the degree at Ferris-Grand Rapids more cost effective, as the student pays GRCC tuition for GRCC courses and Ferris tuition for Ferris courses. Because Ferris classes are held on the GRCC campus in the Applied Technology Center, students can complete a four-year degree without leaving downtown Grand Rapids.

Education for the Working World

Easy scheduling, practical course work and real-world knowledge characterize the programs at Ferris-Grand Rapids. All programs are designed to meet the unique needs of the working adult student. The curriculum provides a broad spectrum of essential skills and emphasizes a balance between applicable theory and practical hands-on learning. In other words, Ferris delivers knowledge students can take to work the next day.

For more information about Ferris State University-Grand Rapids programs, or to set up an appointment with an advisor to complete an unofficial evaluation of credits completed at GRCC, call (616) 451-4777 or (800) 998-3425.

FLEXIBLE LEARNING OPTIONS

Distance Learning Options

Additional information about Web-based courses, telecourses, live Cable TV, and interactive TV courses can be found online at www.grcc.edu/distance or by calling the Distance and Learning Technologies Department at (616) 234-3845.

Web-Based (Online) Courses:

Students will need to access online courses from the campus network or through their own Internet service provider and computer.

A Web-based course is delivered primarily online, with very few on-campus meeting times. Students use a system called "Blackboard" (www.ilearn.grcc.edu) to take these courses. Students who've never taken an online class at GRCC, should take the "Online Student Readiness Survey." Once registered, students can also complete an online orientation (required by some instructors). These resources are available at www.grcc.edu/distance.

For the latest class availability, go to "eGRCC." If an online course is not offered at GRCC, a student may be able to take it from another Michigan community college. GRCC is part of the Michigan Community College Virtual Learning

Collaborative. Through this collaborative, GRCC students can take online courses (not offered at GRCC), while keeping their academic records and receiving support at GRCC. For course listings and other information, visit the MCCVLC site at <http://vcampus.mccvlc.org>.

Telecourses:

A telecourse is a complete instructional course package that includes video programming, textbooks, study guides, several on-campus sessions with an instructor, and course work similar to traditional college classes. The difference is that telecourses deliver this instruction via television broadcast or videotapes. The telecourses GRCC offers are nationally produced and offered through the PBS Adult Learning Services; the nation's most respected and experienced educators have developed them. Students receive the same academic credit as an equivalent on-campus class, which can be transferred to other colleges and universities across the country.

All telecourses are broadcast at least twice weekly over AT&T Cable Channel 28. Videotapes of all GRCC telecourses are available for rent at the Media Technologies office, located in the Learning Resource Center on campus, and are also available for viewing in the College Library.

An orientation session for each telecourse is held at the beginning of each semester. At this orientation, students meet the instructor, receive a class syllabus, and have the opportunity to ask questions. Students also receive important information about textbooks, study guides, and broadcast schedules. Telecourse students will receive a letter with orientation times and locations listed.

Live Cable TV Courses:

Live cable classes are taught on the GRCC campus from one of the five Distance Learning rooms and delivered via AT&T Cable Channel 28, the College Channel. They are designated as "Live Cable" in the Schedule of Classes under "type." These courses are not pre-recorded videotapes. Students enrolling in these courses have the option of watching at home or coming to campus. Those who are at a distance interact with their instructor via telephone. These classes are particularly valuable for students who have difficulty coming on campus for whatever reason. Each class session is videotaped, and the tapes are on file at the GRCC Library for student review.

Interactive TV Courses (ITV):

GRCC offers true two-way interactive classes (two-way audio and two-way video). Classes are typically broadcast from GRCC to the Thompson M-TECSM and to area high schools for Dual Enrollment students. The classes are interactive because there are students at more than one site. They are designated as "ITV" in the Schedule of Classes under "type." The Distance Learning rooms are equipped with advanced technology, using multiple cameras, monitors, CD-ROM, computers, and VCRs—all of which are controlled from an instructor's console. An increasing number of instructors are also incorporating online learning components to further augment communications and interaction.

ITV Class Locations:

- Grand Rapids: GRCC Learning Resource Center (LRC), Downtown Campus
- Holland: Thompson M-TECSM, 6364 136th Avenue PVT
- Area high schools for Dual Enrollment or Early College students

NOTE: *The ITV classes are projected on a classroom television screen “point-to-point,” from one classroom location to another, and are also videotaped for student content review. Videos can be viewed in the College Library.*

Some ITV classes have two course codes: one is the on-campus component and the second is a remote site. Students should be sure to register for the one most convenient for them.

HONOR PROGRAMS

Dean’s List

The Dean’s List is compiled for the Fall and Winter Semesters. Full- and part-time students carrying six or more credit hours and earning a minimum 3.3 GPA (B+) are eligible. Grades of “E” or “I” disqualify students.

Delta Pi Alpha Honor Society

The Delta Pi Alpha Honor Society honors those students graduating with superior scholastic achievement. Members are selected from the top 5 percent of the students receiving a degree who have earned a cumulative grade point average between 4.0 and 3.75. **Students must file a Graduation Audit by February 25 to be considered for the honor.** For additional information, see the Dean of Student Affairs.

Phi Theta Kappa (Alpha Upsilon Kappa Chapter)

Students who have completed 12 or more college credits with a GPA of 3.5 or higher are eligible for membership in the Alpha Upsilon Kappa Chapter of Phi Theta Kappa, the International Honor Society of the Two-Year College. Membership entitles students to list this honor on their resumes and to participate in activities that revolve around Phi Theta Kappa’s four hallmarks: Scholarship, Leadership, Service, and Fellowship. Entering freshmen with a high school GPA of 3.5 or higher may join as provisional members.

Additional information may be obtained from the Director of Student Activities or from the Phi Theta Kappa advisor via e-mail: ptk@grcc.edu.

INTERNATIONAL STUDIES INITIATIVE

“An international education does not just open eyes and broaden perspectives. In an increasingly interdependent world, it is essential to fostering the global and cross-cultural knowledge and understanding necessary for effective U.S. leadership, competitiveness, and security.”

NAFSA: Association of International Educators

The International Studies Initiative is committed to expanding opportunities for international students; for students wishing to travel or study abroad; and for faculty interested in developing or advancing their knowledge of international issues.

To that end, the ISI engages in outreach to other colleges and universities, partnering with internationally focused community organizations, connecting with international programs nationwide and internationally, and working with the many faculty and staff at GRCC who are involved with international students and projects.

For more information, call the International Studies Initiative office at (616) 234-3903.

OLDER LEARNER CENTER

(616) 234-3483

The Older Learning Center offers adults 55 and older opportunities for life-long learning and life enrichment, including Senior Computer and Health Clubs. The Older Learner Center also produces *Successful Aging*, a television program that airs on Grand Rapids area AT&T Broadband Cable; administers Senior Leadership Grand Rapids and the Kent County Caregiver Focal Point; and sponsors public forums, conferences, and events within the community on issues relating to an aging America. The Center is located in the Calkins Science Center, Rooms 215, 216, and 217. Call (616) 234-3483 for more information.

THEATRE

(616) 234-3998

GRCC Players

The Grand Rapids Community College Theatre Department produces three faculty directed productions each year during the Fall and Winter Semesters. These productions are open to all GRCC students. (One need not be enrolled in a theatre class to audition for the plays).

Students may also earn college credit for their participation in the plays—either onstage or working backstage on a crew. Credit is flexible and based on the number of hours the student is able to commit to the project. Students who are not interested in participating in a play for credit may become involved on an extra-curricular basis.

Musical Theatre Cabaret and Environmental Tour

Each spring, students who are enrolled in TH/MU 250 or TH 251 construct a show that tours area schools for four to six weeks during regularly scheduled class hours.

Spring Student-Directed One Acts

Each year the spring theatre production is an evening of one act plays directed and performed by students. Students enrolled in the Theatre Directing Seminar are eligible to propose a directing project. Casting is open to any GRCC student.

Student-Written Productions

When student-written plays are generated by the creative writing classes and the plays are deemed producible, they are scheduled as part of the regular GRCC Theatre Department season. This is done to encourage student writers of drama and to give student actors the experience of becoming more directly involved in the process of creating a theatre piece.

Dance

The GRCC Theatre program also offers theatre dance classes. Students need no previous dance experience to enroll. Classes are open to general students who enjoy dance as a recreational activity.

Tickets

Every GRCC student with a valid ID is entitled to one free ticket to each GRCC production. In addition, all other productions at Spectrum Theater (those produced by Actors' Theatre) offer a limited number of reduced-price passes through the Student Activities Office and low student rates for all performances.

Actors' Theatre

This community-based theatre produces plays on campus and welcomes students, both as performers and backstage technicians.

Anyone interested in more information about theatre opportunities at GRCC should contact the Spectrum Theater. Theater office hours are 10 a.m.-5 p.m. each school day. Information may also be obtained by calling (616) 234-3998.

WORKBASED LEARNING

Apprenticeship Programs (616) 234-3660

Manufacturing and Construction Trades

GRCC offers apprenticeship classes to meet educational requirements for apprentices, journeypersons, and employees-in-training. The Bureau of Apprenticeship and Training, United States Department of Labor, and participating employers agree upon the requirements for apprenticeship. The participating employers set standards and monitor progress of apprentices. Certificates of Completion are issued by the United States Department of Labor to persons who have met their employer's program requirements.

Cooperative Education (616) 234-3664

Cooperative Education (Co-op) is a unique educational program that offers students an opportunity for paid on-the-job training related to their major field of study. It provides a blend of classroom theory and practical job experience through periods of on-campus instruction and supervised off-campus employment.

The program is called Cooperative Education because it results from ongoing cooperation between area employers and the College faculty. Through Co-op, students majoring in business, technology, hospitality, computers, and certain public service curricula can earn academic credit while gaining valuable work experience. Full- and part-time students are eligible to participate.

The following guidelines have been established to help ensure a work experience that is beneficial to the student's academic goals:

1. No more than six credit hours may be used toward graduation requirements.
2. Before enrolling in Co-op, the student must first successfully complete at least 15 credits in program-specific courses.
3. The student must be actively pursuing a degree at Grand Rapids Community College, and the Co-op job must be directly related to the degree.
4. The student should be able to identify specific job responsibilities that will provide experience relevant to the student's occupational program.

For additional information, contact the Director of Workbased Learning, (616) 234-3664.



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WELCOME TO GRAND RAPIDS COMMUNITY COLLEGE AND THE WORLD OF HIGHER EDUCATION...

DEFINITION OF EDUCATION LEVELS

In the United States and some other countries, education falls into categories. The first is Early Childhood, covering the years from babyhood through approximately age seven, overlapping with the next category, Elementary. The Elementary years are considered to be from kindergarten through sixth grade. Seventh through twelfth grades are Secondary.

Education beyond high school is therefore “post-secondary.” Some schools beyond high school are post-secondary but are not considered to be part of higher education. These are schools which offer training but not a college degree. Examples include truck driving schools, cosmetology schools, massage therapy schools, and many others. These schools may be very good at what they do, but they are not authorized to grant degrees.

Higher Education consists of colleges and universities which are authorized to grant degrees. These fall into several levels:

- **The Two-Year College.** Grand Rapids Community College is a two-year college, offering certificates equivalent to one year of study and offering associate’s degrees. The most common two-year degree is the Associate in Arts (AA), referring to a program of study which includes general education requirements and a total of approximately 62 academic semester credits. In addition to the AA degree, GRCC offers the Associate in Science (AS), the Associate in Music (AM), the Associate in Nursing (AN), the Associate in Applied Arts and Sciences (AAAS), the Associate in Business (AB), and the Associate in General Studies (AGS). Most two-year colleges offer similar degrees, although the names might not be exactly the same. In the two-year college world, there are junior colleges, community colleges, technical colleges, and combinations.
- **The Baccalaureate, or Four-Year College.** These colleges may be stand-alone, or they may be part of a larger university system. The most common degrees are the Bachelor of Arts (B.A.) and the Bachelor of Science (B.S.), reflecting the completion of different requirements. There are also specialized degrees for various subjects. A bachelor’s degree generally represents at least 120 semester credits.
- **Post-Graduate.** Some universities confer degrees beyond the baccalaureate level. The master’s degree is usually equivalent to one or two years of study beyond the bachelor’s degree. In some fields, this level is expected for employment. The Master of Social Work is an example; another is the Physician Assistant master’s degree. The doctoral degree is usually equivalent to three or more years of full-time study beyond the master’s degree. The most common doctorate is the Ph.D. (doctor of philosophy). A recognizable specialty degree is the M.D. (doctor of medicine). Many educators earn the Ed.D. (doctor of education).

Years vs. Credits

A two-year degree is not necessarily completed in two calendar years. “Two-year” refers to the number of credits that would be completed if one were attending college full-time. If 62 semester credits are required for a two-year degree, one needs to complete 31 credits each year, or 15-16 credits in each of two semesters, typically Fall and Winter. Many students do not carry such a load. Twelve credits is considered full-time for financial aid purposes or to be on a parent’s health insurance, for instance. A student taking 12 credits each Fall and Winter Semester for two years will have completed only 48 credits. That student might then transfer to a four-year college but would not have sufficient credits for a two-year, or associate, degree. A student who is working, parenting, or has an otherwise busy life might take fewer credits at a time. In general, there is no problem with this—the credits are compiled on the transcript (record of study) until there are enough and all requirements have been met. Students should be aware, however, that some colleges do have time limits.

Full-time vs. Part-time

Generally, enrollment in 12 credits during a semester is considered full-time. This satisfies the need to be a full-time student for financial aid purposes or to be on a parent’s insurance, for example. However, 12 credits per semester will not allow completion of a degree in the stated number of years, because a two-year degree typically requires at least 62 credits. A student enrolling for 12 credits in both Fall and Winter for two years will have only 48 (4 x 12) credits. A fifth semester will be necessary to achieve 62. Enrollment in 15 or more credits each semester is more likely to hit the goal in the stated time. Many students enroll in only as many credits as they can manage while working or raising children. Students should find out whether an institution has a time limit for credits. For example, at GRCC, health courses must be completed within five years, but other courses may have no limits.

Choosing a Major

Years ago, students used the first two years of college to explore a variety of different fields and then declared their majors at the end of the second year. Today, more fields are specialized and require more purposeful study early on. Exploring is not forbidden, but it might add to the time it takes to complete a degree. Most degrees are based on general education requirements and major-specific requirements. At GRCC, seven different degrees are offered, including many specializations within them. A student would be wise to check requirements when enrolling, even for the first time.

On the other hand, a community college is the most cost-effective place to spend money on exploration and figuring out one’s goals. Taking extra courses (before or beyond degree requirements) will be a learning experience at relatively low cost. Students should visit the Career Resource Center for help in deciding on a major or a career.

GRCC College Catalog vs. GRCC Schedule of Classes Course Arrangement

In both the *College Catalog* and the *Schedule of Classes*, courses are listed numerically within an alphabetical arrangement of major subject matter areas.

Credits for courses numbered below 100 are accepted for graduation at Grand Rapids Community College. Credits for some courses are transferable only with approval of the admitting institution.

Example of Course Description:

Course Title → **BI 122** → **Course Number**

Course Credit/Contact Hours
The first number represents the credit hours for the course; the second number represents the contact hours for tuition calculation.

Prerequisites (if any) immediately precede the course description. Prerequisites must be taken before registering for the class.

Course Description → **Prerequisite: Grade of "C" or better in BI 121** – Biology 121 is a continuation of Biology 121. A structural and functional approach to the human organism with an emphasis on the circulatory, lymphatic, respiratory, digestive, urinary, endocrine, and reproductive systems. The course content also includes water, electrolyte and acid-base balance, and human growth and development. Three hours lecture, two hours lab per week in a regular semester.

Example of Course Schedule:

Schedule Legend at Top of Each Column

COURSE NUMBER & TITLE		Department/Program		Course Number & Title		INSTRUCTOR		LOCATION		START/END		***
CODE	TYPE	CR	CH	DAYS	TIMES							
BIOLOGY												
BI 122	Human Anatomy and Physiology-2											
2661	Lecture	3	5	TTh	09:40-11:10AM	Krieger, P	SCIE204	09/03-12/19				
2662	Lab	0		Th	12:30-02:40PM	Krieger, P	SCIE339	09/05-12/19				
2663	Lab	0		T	12:30-02:40PM	Krieger, P	SCIE339	09/03-12/19				

CR = Credit Hours CH = Contact Hours * = Comments**

Accreditation

If a school is accredited, it has achieved certain standards published by its accrediting agency. It has studied itself and passed a site visit. Accreditation assures the public that the school cares about standards of quality and has worked to achieve them; it does not mean that the school is perfect in all respects.

There are two kinds of accreditation: institutional and programmatic. GRCC is institutionally accredited by the Higher Learning Commission (HLC) of the North Central Association. People sometimes refer to it as "NCA." Institutional accreditation means that the college as a whole has met the standards of the HLC.

Programmatic accreditation is more specialized and more specific. Specialty agencies such as the National League for Nursing or the American Culinary Federation Accrediting Commission, for example, establish requirements and standards for their fields. The program performs a self-study and hosts a site visit by a team from the specialty agency. A program which has achieved programmatic accreditation meets national standards for its field. Sometimes the professional exam or certification for a particular field requires that the potential professional have graduated from an accredited program.

Transferability

Not all courses transfer everywhere. Most colleges and universities accept credits from other institutions which are accredited. Since GRCC is institutionally accredited, credits are more likely to transfer than otherwise. However, most institutions have certain grade requirements for transfer, and receiving institutions have the right to reject credits which they don't recognize. A college of arts and sciences might not be willing to transfer a course in a field they don't have—although some colleges will accept "unrecognized" credits as elective credit. Developmental courses usually do not transfer. The receiving institution decides if a GRCC course will be considered developmental at that institution. Counselors can help students determine the transferability of particular courses.

Do All Colleges Teach the Same Courses the Same Way?

Most colleges and universities offer some of the same classes; for example, Freshman Composition, General Psychology, College Algebra. Often the titles are not the same, but there is a transfer equivalency—that means the content is similar enough that one institution will transfer the course from another institution. However, there is neither standard content nor standard method of teaching for all colleges. While some states have agreements that courses at two-year colleges will be the same as those of the same name or number at four-year colleges, Michigan does not. Consequently, it's possible for what appears to be the same course at two different institutions to cover different material and opinions and to have different styles of teaching. This diversity is one of the strengths of higher education in the United States.

Students should keep this diversity in mind when considering where to transfer. Those interested in a particular subject taught from a particular point of view should check out the department they are interested in before deciding where to transfer. Psychology, for example, might have a behaviorist approach at one college and a Freudian approach at another.

TRANSFER INFORMATION

In order to verify transfer credits, students are responsible for contacting the college or university to which they wish to transfer. Each institution reserves the right to make changes in transfer requirements without prior notification.

Students who plan to attend another college or university should:

1. Investigate carefully both the entrance and degree requirements of the institution to which they plan to transfer. Michigan college and university catalogs are available for student use in the Counseling Center.
2. Discuss transfer requirements with a GRCC counselor.
3. Confer with college representatives who visit GRCC.
4. Apply for transfer admission well in advance of the anticipated date of transfer.
5. File a request with the Office of the Registrar for an official transcript to be mailed to the transfer institution.
6. Be aware that the transfer institution reserves the right to recalculate grades and point averages.

DETERMINING TRANSFER STATUS

Michigan Association of Collegiate Registrars and Admissions Officers (MACRAO) Agreement

The MACRAO Agreement is a contract between community colleges and most four-year institutions in Michigan. Fulfilling the credits in the subject areas required by the MACRAO agreement will satisfy the general education requirements at many Michigan colleges and universities. The student's transcript is then marked as having met the MACRAO standards. Since all schools may have conditions in place with acceptance of the MACRAO, students are advised to meet with GRCC counselors for specific advice to help make informed choices.

Keep in mind:

1. Some transfer institutions will accept the MACRAO Agreement only if it is part of an entire associate's degree. Other institutions may honor the MACRAO Agreement if completed without degree graduation.
2. There may be additional requirements at the chosen transfer school. Commonly, these requirements are associated with a junior level writing course or a course of writing within the major.
3. Upon admission, some institutions may still require a competency test in certain areas.
4. Some institutions have specific majors that require additional courses and tests prior to being admitted into that major. See a GRCC counselor for more information.

The best source for requirements at four-year schools—GRCC counselors! Many GRCC faculty members are also familiar with requirements at various schools in their area of specialty. Meeting with advisors at the four-year colleges a student is considering will help in understanding what additional requirements could be completed at GRCC.

Students are responsible for their academic decisions, so it's important that they seek accurate information.

GENERAL EDUCATION FOR TRANSFER STUDENTS

Virtually all colleges and universities require a variety of courses in English, the humanities, the biological and physical sciences, and the social sciences. These courses serve to broaden the intellectual background of the average student regardless of the specific subject area in which the student may be interested. The sequence of courses is termed general education.

Typically, four-year colleges and universities have two sets of requirements: (a) the general education requirements which all students must fulfill and which are usually taken during the freshman and sophomore years, and (b) the requirements of a specialization, commonly known as the major, which are usually taken during the junior and senior years.

This part of the catalog contains information about the specific requirements and programs offered by most four-year colleges and universities in Michigan. Even though the information has been carefully compiled, Grand Rapids Community College cannot guarantee its accuracy nor assume any responsibility resulting from the reliance on the information herein provided. Because colleges and universities often change their entrance and graduation requirements in order to meet changing circumstances, students who intend to transfer should consult the most current catalogs of those schools. Therefore the information provided here should be construed as a preliminary guide in a student's transfer planning process.

GENERAL EDUCATION FOR TRANSFERABILITY

■ GRAND RAPIDS COMMUNITY COLLEGE Associate in Arts Degree with MACRAO Group Requirements

Communication Skills 6
EN 100 or 101 and EN 102
(BA 101 and 102 will not apply)

Group I—Humanities 8
Courses taken from two or more disciplines
AR 111*
AT 105, 106, 190, 195, 270, 271
Any 200 level English course (EN)
Any Foreign Language course
Any Humanities* (HU)
MU 107, 109, 235, 236, 237
Any Philosophy (PL)
PO 105
Any Speech (except SC 171 and SC 172)
TH 248

Group II—Social Science 8
Courses taken from two or more disciplines
Must include PS 110 (for full degree only)
(NOT required for MACRAO)
Any Anthropology (AN)
CJ 110, 111, 140, 235, 236 and 237*
Any Economics (EC)
Any Geography (GE)
Any History (HS)
Any Political Science (PS)
Any Psychology (except PY 281)
Social Science* (SS)
Any Sociology (SO)

Group III—Natural Sciences and Mathematics 8

Courses taken from two or more disciplines
(Must include one Lab Science)
AS 102 or AS 103
Any Biology
BA 150 and 254*
Any Chemistry (CM—except CM 100)
CO 124, 127 and 227 and 225*
EL 132*
Any Geology* (GL)
GE 132*
Any Mathematics (MA—except MA 003)
Any Physical Science (PC)
Any Physics (PH)
PY 281*
TE 103 and 104

Total academic hours required for degree: 61
Wellness Activity credit: 1
Total 62

* Courses marked with an asterisk (*) fulfill Grand Rapids Community College requirements, but they may not be accepted by four-year institutions where students intend to transfer. Students should consult the equivalency guides of those institutions to determine transferability.

■ AQUINAS COLLEGE (updated 12/02) www.aquinas.edu

Every student entering Aquinas College who has completed an **Associate of Arts Degree** will have satisfied the general education requirements except for Theological Foundation. All students must meet proficiency requirements in English and Mathematics. Students without the Associate of Arts Degree should contact Aquinas College Admissions for General Education requirements.

■ CALVIN COLLEGE (updated 12/02) www.calvin.edu

Grand Rapids Community College students planning to transfer to Calvin College should complete as many as possible of the requirements listed below. A maximum of seventy (70) credit-hours may be transferred to Calvin.

- **English and Rhetoric in Culture**
EN 101 and 102; SC 131
- **Fine Arts**
AT 105, 106 or MU 107, 235, 236, 237, TH 248
- **Foreign Language**
Students will be required to attain an intermediate level of proficiency in one foreign language (equivalent to that of the fourth semester of college study)
- **History**
HS 101 or 102

- **Natural Science and Mathematics**
 - At least four (4) hours each in: biological science (BI 101, 103 or 117) physical science (CM 103, 104, PH 125, 126, AS 103, or GL 101), PC 101
 - Mathematics (MA 124, 127, 129, 133, 134, or 215)
(The natural science requirement can also be met by a two-course sequence in biology, chemistry, or physics.)
- **Literature**
EN 261, 262, 281, 282, 233, or 235, 237, 270, 271
- **Philosophy**
PL 201
- **Physical Education (3 Activity Courses)**
- **Persons in Community**
PY 201
- **Societal Structures in North America
(only one needed)**
SO 251, EC 252, PS 110, CJ 110

■ CENTRAL MICHIGAN UNIVERSITY www.cmich.edu

Central Michigan University participates in the MACRAO Agreement.

A student may satisfy the University Program General Education requirement at Central Michigan University with the MACRAO stamp.

Additional Requirements:

- SC 131, 135, 227, 241: 3 semester hours. Can be taken as one of the humanities. ("C" grade or better.)
- MA 107: 4 semester hours. Can be taken as one of the natural sciences if no other mathematics is required in the Community College program. ("C" grade or better.)
- EN 101 and 102, English Composition: 6 semester hours ("C" grade or better.) EN 101 and 102 Education majors ("B" grade or better.)

■ DAVENPORT UNIVERSITY www.davenport.edu

Grand Rapids Community College students who plan to transfer to Davenport University may complete most of their general education (core curriculum) at Grand Rapids Community College. All requirements for general education except statistics will have been fulfilled for students who have earned the Associate of Arts or Associate of Science degree.

Grand Rapids Community College and Davenport University agree that any student who has completed an associate's degree at Grand Rapids Community College may transfer credits towards a bachelor's degree program at Davenport University. The graduation requirements for students who follow the articulation agreement are expressed as follows:

1. Earn an associate's degree at Grand Rapids Community College;

2. Earn a total of a least 120 semester hours towards a bachelor's degree including the credits transferred from Grand Rapids Community College;
3. Select a major at Davenport University which is consistent with the Grand Rapids Community College degree program;
4. Meet Davenport University residency requirements within the selected bachelor's degree program.

Grand Rapids Community College and Davenport University agree that a person who has completed an associate's degree at Grand Rapids Community College may transfer to a bachelor's degree program and not be required to take duplicate course work. The selection of a degree program at Davenport University will determine the extent of credit transferred.

Programs

Accounting
Air Conditioning, Refrigeration and Heating Technology
Business Administration
Computer Applications
Computer Information Systems
Applications Software
Local Area Network
MIS Programming
Fashion Merchandising
Legal Office Administration
Management and Supervision
Marketing
Multimedia Technology
Tooling and Manufacturing Technology

As a result of semester conversion, Davenport University will be undergoing some program changes. Please see an Admissions Representative before scheduling third-year classes. For more information, please call (616) 732-1200.

■ EASTERN MICHIGAN UNIVERSITY (updated 12/02) www.emich.edu

Students who have been certified by Grand Rapids Community College as having satisfied the general education requirements of the MACRAO Agreement and have earned a grade of "C" or better in each required course will be required to fulfill only the four additional courses now part of Eastern Michigan University's basic studies requirements: an advanced writing or speaking course or a foreign language composition course; a mathematics course (unless waived by ACT scores); a computer literacy course; and a cross-cultural/ international studies course, all from the approved list (EMU Basic Studies in EMU Catalog). This agreement applies only to basic studies and does not exempt the GRCC student from meeting all curriculum and graduation requirements.

■ **FERRIS STATE UNIVERSITY** (updated 12/02)
www.ferris.edu

The groupings listed below represent the recommended minimum general and liberal studies requirements for all baccalaureate degree programs. In addition, a year of physical education (activity) should be completed.

- English** 9
 English 100 and 102, or English 101 and 102 and SC 135, 131
- Humanities** 9
 Art, foreign language, history, humanities, literature, music, philosophy (at least one course at 200 level), Speech 131 or 135
- Behavioral Sciences (Social Sciences)** 9
 Economics, geography (except physical geography), political science, psychology, sociology (at least one course at 200 level)
- Science** 8
 Astronomy, biology, chemistry, physical geography, geology, mathematics, physical science, physics (at least one course with lab)
- Electives** 36
 Elective courses should be selected with the assistance of the Counseling Center in view of the student's proposed major.

GRCC MA 107 = FSU MTH 115 or competency

Note: There are many programs at Ferris which build upon the associate's degree. See the Ferris State catalog or a counselor for specific information regarding these 2 plus 2 programs.

Please see the Advising/Counseling Office at FSU or GRCC.

■ **GRAND VALLEY STATE UNIVERSITY** (updated 12/00)
www.gvsu.edu

Concurrent Enrollment Agreement: GRCC has established a concurrent enrollment agreement with Grand Valley State University (GVSU) so that students of both institutions can make full use of the variety of courses offered at both institutions. Through this agreement, students have more scheduling options, more choice of course locations, and many more courses available. Students may take courses at both institutions simultaneously or alternate enrollment between them.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

Students are encouraged to complete the MACRAO agreement prior to transfer.

GVSU undergraduate degree requirements include mathematics competence at the level of GRCC Mathematics 107. Students planning to transfer to GVSU should therefore include that course in their GRCC course work.

■ **Historically Black Colleges and Universities (HBCU) Historically Hispanic Serving Institutions (HSI)**

Students who are interested in completing their associate's degree at Grand Rapids Community College and then transferring to a historically Hispanic Serving Institution or a predominantly and Historically Black College and University should contact the GRCC Counseling Center in Room 327 of the Student Community Center for assistance. When a student has chosen his/her prospective institution, the Counseling Center will facilitate a transfer plan to determine what courses are required for transfer. The Counseling Center has identified Web sites and has collected catalogs, applications, scholastic and financial aid information for most schools.

■ **KETTERING UNIVERSITY** (updated 12/02)

Transfer credit is granted for courses at Kettering University. Please visit the Counseling Center for specific transfer program information.

■ **LAKE SUPERIOR STATE UNIVERSITY** (updated 12/02)
www.lssu.edu

To transfer to LSSU a student must have a minimum GPA of 2.0. Transfer credit is granted for courses similar in length, content and course prerequisites to Lake Superior State University offerings. Courses which are dissimilar but with university-level content will transfer as general elective credit. LSSU will accept any course meeting the above criteria for which a "C-" or better was earned. Also, there is no limit on the number of credits a student may transfer to LSSU; however, at least 32 of the final 40 credits and at least fifty percent of the departmental required 300/400 level credits must be earned at LSSU. A minimum mathematics competency for graduation at LSSU can be met by completing MA 107 or MA 124. LSSU is a signatory to the MACRAO Agreement. Students are encouraged to check the LSSU catalog for departmental requirements that may be taken at GRCC.

English and Speech

EN 100 or 101 and EN 249 (or EN 102 and BA 102), SC 131

Humanities

A maximum of four (4) semester credits per discipline or total in foreign languages (2nd year) allowed to count for this requirement:

Art-AT 270 (or 106 and 271)

Foreign Languages-FR 231 and 232, GR 231 and 232, SP 231, 232

Music-MU 109, 191, 194, 195, 196, 235, 236, (Do NOT take MU107, 108, 237)

Philosophy-PL 201, 202, 205, 207, 291, 292, 293, 298, 299

Theater-TH 248, 249

Other-AT 105, HU 270, 273, 298, 299

(Do NOT take HU 280)

Social Science

Any combination of courses with credit totaling at least eight (8) semester hours:
 Economics—EC 251, 252, (Do NOT take EC 298, 299)
 Geography—GE 132, 135, 136, 140, 298, 299
 History—HS 101, 102, 241, 242, 249, 250, 260, 290, 295, 298, 299
 Political Science—PS 110, 202, 298, 299
 Psychology—PY 201, 203, 231, 232, 233, 234, 251, 281, 298, 299, (Do NOT take PY 101, 106)
 Sociology—AN 201, 205, 210, CJ 111, 245, CD 116, SO 205, 251, 254, 261, 262, 270, 291, 295, 298, 299
 Social Science—SS 115, 220, 291, 292, 293, (Do NOT take SS120)

Natural Science

At least one (1) course from each of the following two (2) categories:
 Life sciences—BI 101, 103, 104, 117, 121, 122, 127, 130, 207, 291, 298, 299, (Do NOT take BI 120, 125, 232)
 Physical sciences—AS 103, CM 101, 103, 104, 113, 114, 210, 231, 241, 266, 267, 298, 299, GL 101, 104, 298, 299, PC 101, 141, 151, 298, 299, PH 115, 125, 126, 146, 245, 246, 247, 248, 298, 299, (Do NOT take CM 100)

Math Competency

MA 107, 124

■ **MICHIGAN STATE UNIVERSITY** (updated 12/02)
www.msu.edu

Courses similar in content and designated as general education courses by other accredited colleges will be accepted in place of the appropriate MSU courses.

Other courses from accredited colleges which are acceptable substitutes for MSU general education courses are shown in the following schedule. It is recommended that students intending to transfer to MSU incorporate these credits into their curriculum before transferring. Students planning to earn an associate's degree with the MACRAO should refer to the GRCC catalog for further requirements.

1. **American Thought and Language** 6
 EN 100 or EN 101 plus EN 102
2. **Biological and Physical Sciences** 8
 (2 Lab credits) Choose at least one class from the following:
 BI 101, 103, 104, 111, 117, 121, 122, 201, 202, 203, 204, 207, 232, 289
 Choose at least one class from the following: AS 102, 103; CM 101, 103, 104, 109, 113, 114, 210, 231, 266, 267; GL 101, 104, 105; PC 101, 141, 151; PH 115, 125, 126, 146, 245, 246, 247, 248
3. **Social and Behavioral Sciences** 3-4
 Choose one course from the following: AN 201, 205, 210, 280; CD 120; EC 251, 252; PS 110, 200, 202, 215; PY 201, 203, 231, 232, 233, 234; SO 251, 254, 260, 270, 295; SS 120, 220

4. Arts and Humanities 6-8

Choose HS 249 or HS 250
 Choose one course from the following: AT 105, 106, 195, 270, 271; EN 233, 235, 237, 242, 246, 261, 262, 270; TH 248; HS 101, 102, 241, 242, 290, 295; HU 270, 280; PL 201, 202, 205, 209; MU 107

Please note: MSU's Integrative Studies Program requires that a student complete IAH 201 in the Integrative Arts and Humanities component. GRCC students can fulfill this requirement by coupling HS 249 or HS 250 with EN 100 or EN 101 plus EN 102.

MATH: Students must demonstrate math competency in one of two ways:

1. Complete MA 110 or MA 131 at GRCC;
 OR
2. At MSU take the math competency test and test into MTH 132

CHECK OUT OUR WEB:

Automated Credit Transfer System (ACTS IV) is now available through the MSU Transfer Home page:
www.admis.msu.edu/transfer.asp

■ **MICHIGAN TECHNOLOGICAL UNIVERSITY** (updated 12/02)
www.mtu.edu

Transfer credit is granted for all courses in which grades of "C" or better are earned, provided the courses are similar in length, content, and course prerequisites to the Michigan Tech offering. Recommended programs for students planning to transfer to specific Michigan Tech curriculums are available in the GRCC Counseling Office or from the University.

English 6

English 100 and 102 or English 101 and 102

Government or Economics 3

Political Science 110 or Economics 251 or 252

Approved humanities electives must be selected from:

AT 105, 106, 205, 270, 270; EN 233, 235, 237, 242, 261, 262, 270, 271, 275, 291, 292; HU 270, 273, 280; MU 107, 109, 235, 236, 237; PL 201, 202, 205, 207; PY 201, 203, 231; TH 249.

Approved social studies electives (6 credits)

must be selected from:

AN 201, 205, 210; BI 114; CJ 111, 115; GE 132, 135, 140; HS 101, 102, 201, 205, 241, 242, 249, 250, 260, 290, 295; PS 102, 201, 202, 210, 215, 220; SO 251, 254, 261, 265, 270, 295.

One class from one of the following area:

European or World history, Western Civilization or Anthropology 3

Approved humanities electives (6 credits)

must be selected from:

AN 210, 280; AT 105, 106, 203, 204, 205, 206, 207, 208, 210, 215, 220, 230, 231; EN 233, 235, 237, 242, 247, 248, 250, 252, 261, 262, 270, 271, 291, 292; FR, 101, 102, 231, 232; HS 101, 102, 241, 242, 249, 250, 260, 290; HU 270, 273, 280; JR 251, 252, 254; MU 101, 102, 107, 109, 190, 191, 192, 194, 195, 196, 236, 237, 239, 240, 263, 294; PL 201, 202, 205, 206, 207, 209; PO 103, 104, 105; PY 201, 203, 232; SC 131, 135, 235; SO 260; SP 101, 102, 231, 232; TH 243, 245, 247, 248, 249, 255

Approved social studies electives (6 credits)

must be selected from:

EC 251, 252; GL 104, 105; PS 110, 200, 201, 202, 215; SO 251, 254, 261, 262, 265, 20.

**Physical Education 3
Science and Mathematics**

Since the science and mathematics courses vary from curriculum to curriculum, students should consult the Michigan Tech recommended transfer guidelines for specific requirements. Approximately 15-45 credits will be required in science, mathematics, or engineering.

Notes:

1. Michigan Technological University has attached provisos to the MACRAO agreement. Therefore the transfer guidelines provided by M.T.U. do not necessarily complete MACRAO requirements and/or degree requirements for Grand Rapids Community College.
2. It is not required that student complete all recommended courses prior to enrolling at Michigan Tech. There are no minimum or maximum credits restrictions in effect for transfer students. There is a residency requirement of one year for all students. Qualified students will be accepted anytime they choose to apply regardless of the number of courses completed, provided openings exist in the requested program.
3. Upon acceptance to Michigan Technical University, counseling and additional information services are available to help ease the student's transition to the University's academic program. Students desiring additional information may contact the admissions office at MTU.

■ **NORTHERN MICHIGAN UNIVERSITY (updated 12/02)**
www.nmu.edu

Students who are undecided upon which major to pursue are encouraged to complete NMU's Liberal Studies Program requirement. The Liberal Studies Program comprises of 30 to 40 semester credit hours, which are distributed among six divisions. These are the general education requirements for all baccalaureate degrees at Northern Michigan University.

Some degree programs at NMU require specific liberal studies courses. These courses are listed in the degree requirements for each major in the university's bulletin. Students who have not completed these courses at their previous institution(s) may be required to complete them at NMU even if they have completed the Liberal Studies Program requirements.

Courses used to fulfill Liberal Studies Program requirement may also be used to fulfill individual major/minor requirements.

Division I - Communication 6-8

Select two courses: EN 100 or 101; and EN 102 (Note: Students must complete the freshman English course with a grade of "C-" or better, Education majors must have a "C" or better.)

Division II - Humanities 6-8

Select two courses (Courses in bold fulfill 300 level requirement): EN 242, **EN 261, EN 262**, EN291, EN 292, HS 101/102, HU 270, HU, 273, HU 280, PL 201, PL 205, SC 241

Division III - Science/Mathematics 6-8

Select two courses (Must include one course with a laboratory): AS 102, AS 103, BI 101, BI 103, BI 104, BI 114, BI 117, CM 101, CM 103, CM, 104, CM, 113, CM 114, CM 210, GE 132, GL 101, MA 108, MA 110, MA 127, MA 131, MA 133, PH 115, PH 125, PH 126, PH 245, or PH 246

Division IV - Social Sciences 6-8

Select two courses (Courses in bold fulfill World Cultures requirement): **AN 201, AN 210, GE 135, HS 249**, HS 250, PS 110, PY 201, SO 251, or SO 254.

Division V - Formal Communication Studies 3-4

Select one course: BA 254, CO 151/153/161, FR 101, FR 102, FR 231, FR 232, GR 101, GR 102, GR 231, GR232, MA 215, PL 202, SP 101, SP 102, SP231, or SP 232

Division VI - Visual and Performing Arts 3-4

Select one course: AT 105, AT 106, MU 107, MU 109, or TH 248

Other Graduation Requirements:

1. Heath Promotion: Complete WE 165 and a WER activity course.
2. Student must pass NMU's Writing Proficiency Examination (taken at NMU after Division I is completed.)

■ **UNIVERSITY OF DETROIT MERCY (updated 12/00)**
www.udmercy.edu

Grand Rapids Community College students who plan to complete their bachelor's degree at University of Detroit Mercy (UDM) may complete the majority of their core curriculum requirements at GRCC. A student can transfer up to 63 credits from GRCC.

For more information, contact an Admissions Counselor at (313) 993-6031.

■ **UNIVERSITY OF MICHIGAN (updated 12/01)**
College of Literature, Science and the Arts
www.umich.edu

The distribution requirements for the B.A. and B.S. degrees are specified below. In planning a program for the first two years, the student should elect a field of concentration. A maximum of sixty-two (62) credit hours may be transferred if an associate's degree has been completed; 60 credit hours if the associate's degree was not completed. Although credits are not indicated

below, in a normal semester a student should elect 15 credit hours. In addition, to be accepted for transfer, students must attain a minimum grade-point average of 3.0 at GRCC.

English–Writing Competency Test

1. **Introductory Composition:** According to competence demonstrated in the writing portfolio, students will be placed in one of three categories:
 - a. **Tutorial:** A one-to-four credit tutorial, offered by the English Composition Board, which must be followed by an introductory composition course taught in the English Department.
 - b. **Introductory Composition:** A four-credit writing course, taught in the English Department, which must be taken in one of the first two semesters after matriculation.
 - c. **Exempted:** No introductory composition requirement to fulfill before the upperclass writing course or program.
2. **Upperclass Writing:** A course or program must be completed by all students after their sophomore year. It should, if possible, be taken in any area when such a course or program is not offered in the student's area of concentration, and it may be taken in any area when no concentration is declared.

Foreign Language

1. Certified proficiency on a University of Michigan reading and listening test.
2. Credit for a fourth-term language course.
3. Credit for a University of Michigan language course which presumes a fourth-term proficiency in a language (except for 305 and/or 306 in French, German, Italian, and Spanish.)
4. This requirement may be met by scoring 600 or higher on the College Entrance Examination Board (CEEB) Achievement Test.

English Composition: College Requirement

All new freshmen and transfer students must fulfill a 2-part Language, Science, and Arts (LS&A) English Composition requirement: 1) a first-year writing course; 2) an upper-level writing course. The first part of the requirement is met through a course taken in LS&A or through a course taken elsewhere that satisfies the requirement. Courses that currently satisfy the requirement are listed on the Web site for the English Composition Board and Gayle Morris Sweetland Writing Center (www.lsa.umich.edu/ueb).

The second part of the English Composition requirement is a writing-intensive course taken during the junior or senior year. These courses are offered in many disciplines, and each student chooses a course that is suitable to his or her individual interests and programs of study.

Humanities*

Three courses must be taken to total nine hours.

Social Science*

Three courses must be taken to total nine hours.

Natural Sciences*

Three courses must be taken to total nine hours.

Creative Expression*

One or two courses must be taken to total three hours.

Mathematics and Symbolic Analysis*

One course must be taken to total three hours.

* *Not to include courses in your field of concentration.*

■ WAYNE STATE UNIVERSITY

(updated 12/02)

www.wayne.edu

Transfer Admission

1. Transfer students are considered for admission if they meet the following minimum conditions:
 - a. Completion of at least one semester of college work (12 transferable semester credits or 18 quarter credits) at an accredited college institution with a cumulative "C" average (2.00).
 - b. Students who have attended unaccredited institutions should consult with the admissions counselor to determine admissibility.
 - c. For those students who have completed fewer than 12 transferable academic credit hours with a "C" average at another institution, the high school record will be used as an additional factor in determining the admissibility.
2. If an applicant has a least a 2.0 grade point average from both high school and college but lacks the completion of twelve hours of transferable credit, he/she may elect to take either the Scholastic Aptitude Test (SAT) or the American College Test (ACT). A minimum aggregate score on the SAT of at least 970, or a composite score on the ACT of at least 21, is required. Examination scores are not to be construed as an adequate substitute for good achievement in course work.

Transfer of Undergraduate Credits

Wayne State University policy governing transfer credit from all accredited institutions of higher education will be applied equally to students transferring from community colleges and from baccalaureate-granting colleges and universities. With the exception of a credit-hour acceptance limit on non-baccalaureate-granting institutions (which basically have programs whose extent is not designed to replicate more than the first two years of traditional baccalaureate institutions), transfer credit policy will apply equally to all transfer students, regardless of whether or not such students have completed requirements for a two- or four-year college degree.

General Rules Concerning Transfer of Credit: Wayne State University will accept equivalent academic credit from accredited baccalaureate-granting institutions, and up to 64 semester credit hours from accredited institutions which offer associate's degrees. Credits accepted for transfer must be for courses for which a course equivalence exists or which have been determined to be of a traditional academic nature.

Transfer of Course Work Graded "D": Wayne State University will accept for transfer credit course work carrying the grade of "D", provided the cumulative grade point average earned by the transfer student meets admission standards. (Acceptance of transfer credit carrying the grade of "D" in ful-

fillment of major program requirements will follow the current policy governing acceptance of “D” grade credits earned by native students.) No transfer grades apply in computing Wayne State grade point averages.

■ **WESTERN MICHIGAN UNIVERSITY** (updated 12/02)
www.wmich.edu

1. The Western Michigan University (WMU) General Education Program requires a minimum of 37 semester hours, not counting the baccalaureate-level writing course proficiency.
2. To complete the freshman-sophomore requirements, transfer students from GRCC must present transcripts that indicate a “MACRAO Agreement Satisfied” or have completed 29-31 hours from the GRCC courses listed below.
3. No more than two courses from one department may be used to satisfy distribution requirements.
4. Proficiencies #1 and #3 (college-level writing and mathematics/quantitative reasoning) must be satisfied before one may register for 300 and higher level WMU courses.
5. After transferring, students fulfilling #2 above will need only to complete the junior-senior requirement of two (2) 300-400 level courses (6-8 hours) in the distribution areas and proficiency #2 at WMU.
6. See the 2001-2003 WMU Undergraduate Catalog for a detailed explanation of this program.

DISTRIBUTION—One course required from each area, including two at WMU (per #5 above):

Area I: Fine Arts (3-4 hours minimum)

AT 105, 106, 270, 271; EN 233, 235, 237;
HU 270, 273, 294; MU 107, 109, 235, 236, 237; TH 248

Area II: Humanities (3-4 hours minimum)

EN 250, 252, 261, 262, 281, 282; HS 101, 102; HU 240, 280;
PL 201, 205, 207, 209

Area III: The U.S.: Cultures and Issues (3-4 hours minimum)

AN 280; EN 270, 271; HS 249, 250; PS 110; SO 260

Area IV: Other Cultures and Civilizations (3-4 hours minimum)

AN 210; HS 102 (unless used in Area II); PS 215

Area V: Social and Behavioral Sciences (3-4 hours minimum)

AN 205; BA 103, 288; EC 251, 252, 283; GE 135, 140;
HS 241, 242, 260, 290, 295; PS 202; PY 201; SO 251, 254;
SS 115, 120, 220

Area VI: Natural Sciences with Lab (4-5 hours minimum)

AS 103; BI 101, 103, 104; CM 101, 103, 109, 113;
GL 101; PC 101; PC 111; PH 101, 115, 125, 245

Area VII: Natural Science and Technology:

Applications and Implications (3-4 hours minimum)

AN 201, BI 120, JR 254, PL 206

Area VIII: Health and Well-Being (2 hours minimum)

BI 125

PROFICIENCIES—Required minimums noted:

1. College-level writing course (one course): EN 100, 101, 102, 249; BA 102
2. Baccalaureate-level writing course: Will be done at WMU
3. College-level mathematics or quantitative reasoning course (one course): MA 108, 110, 124, 127, 129, 131, 133, 210, 215; PY 281
4. Advanced proficiency course in one of these seven areas (minimum hours noted):
 - a. Advanced writing (3-4 hours): EN 243, 244, 246
 - b. Mathematics/quantitative reasoning (3-4 hours): MA 129, 133, 211; BA 254
 - c. Critical thinking (3-4 hours): PL 202
 - d. Oral communication (3-4 hours): SC 131, 135
 - e. American Sign Language (3-4 hours): SC 171, 172
 - f. Computer programming and applications (3-4 hours): CO 116, 124, 127, 224, 225
 - g. Advance foreign language proficiency to at least 2nd semester college-level (6-8 hours): FR 101, 102, 231, 232; GR 101, 102, 231, 232; SP 101, 102, 231, 232

Computer Literacy Requirement

GRCC students may fulfill this WMU requirement in one of three ways:

1. Successfully complete CO 110 at GRCC.
2. Enroll in a WMU program that fulfills this requirement.
3. Prove competency through WMU computer literacy exam.

Articulation in Occupational Education

Grand Rapids Community College has entered into an articulation agreement with Western Michigan University under which degreed graduates of many GRCC occupational programs will transfer smoothly into baccalaureate programs at WMU. For further information visit the Counseling Office.

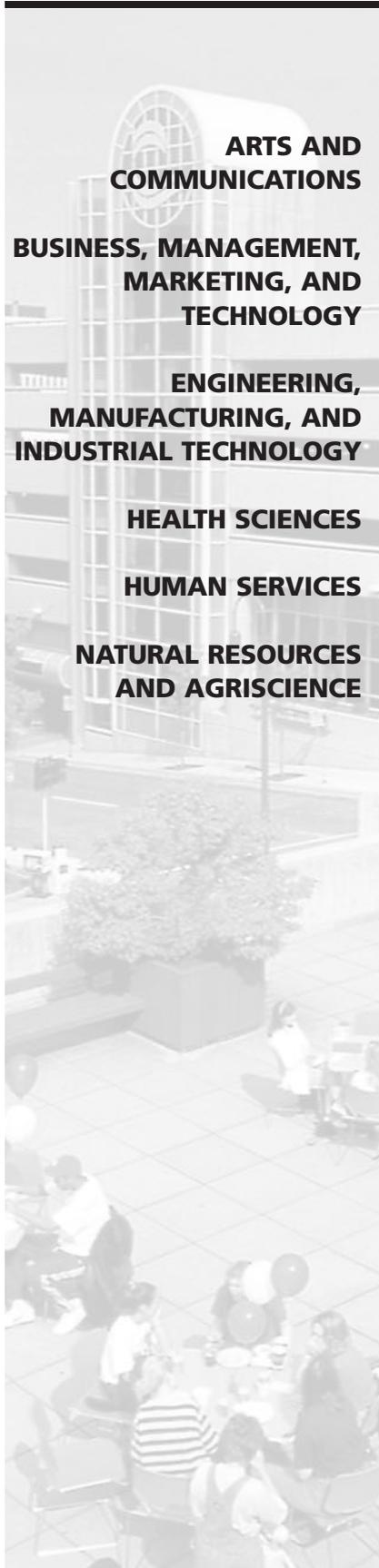
WMU offers the opportunity to GRCC students who have completed certain occupational programs to be certified as career and technical teachers. For more information, please call WMU at (269) 387-4578.

Foreign Language

All students who enter Western Michigan University under the Fall 1993 Catalog or subsequent catalogs and who will graduate from the College of Arts and Sciences must complete the College foreign language requirement by: completing two semesters of college-level study of the following GRCC courses: FR 101, 102; or GR 101, 102; or SP 101, 102 with a passing grade; OR attaining an appropriate score on WMU's foreign language proficiency examination (students seeking to satisfy this provision should contact WMU's Department of Languages and Linguistics to arrange for testing) OR having completed two years of a foreign language in high school with a grade of “B” or better in the final semester.

GRCC CURRICULA

ARTS AND COMMUNICATIONS	..... 52
BUSINESS, MANAGEMENT, MARKETING, AND TECHNOLOGY	..... 61
ENGINEERING, MANUFACTURING, AND INDUSTRIAL TECHNOLOGY	..... 86
HEALTH SCIENCES	..... 109
HUMAN SERVICES	..... 129
NATURAL RESOURCES AND AGRISCIENCE	..... 147





Arts and Communications

Arts and Communications

Are you a creative thinker? Are you imaginative, innovative, and original? Do you like making crafts? Is drawing, playing a musical instrument, taking photos, or writing stories of interest to you?

This program of study relates to humanities; and to the performing, visual, and literary arts. These careers are interesting to people who value creativity and express personality qualities with an emphasis on feelings and emotions, such as:

- ◆ Creativity
- ◆ Aesthetics
- ◆ Imagination
- ◆ Idealistic
- ◆ Expressive
- ◆ Independence
- ◆ Non-Conforming

Careers related to the humanities; the performing, visual, literary, and media arts are:

- ◆ Art Therapist
- ◆ Journalist
- ◆ Musician
- ◆ Art Teacher
- ◆ Television Director
- ◆ Reporter
- ◆ Technical Writer
- ◆ Interior Decorator
- ◆ Architect
- ◆ Photographer
- ◆ Drafting Technician
- ◆ Paralegal
- ◆ Medical Illustrator
- ◆ Script Writer
- ◆ Chef
- ◆ Artist
- ◆ Author
- ◆ Librarian
- ◆ Advertising Executive
- ◆ Floral Designer
- ◆ Broadcaster
- ◆ Sound Engineer

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COMMUNICATIONS



Arts and Communications

GRCC Educational Choices:

Associate in Arts (MACRAO Agreement)

**Contact: Counseling Department
 (616) 234-3900**

COMMUNICATIONS:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Grand Valley State University** (updated 12/02)

FIRST YEAR

First Semester	Second Semester
EN 100 or 101 3	EN 102 3
SC 131 3	Science Lab 4
PS 110 3	WE 1
MA 107 4	World Perspectives ... 3
Humanities/ Soc. Sci. . 3	Elective 4
16	15

SECOND YEAR

First Semester	Second Semester
WE 1	Humanities/Soc. Sci. . 3
U. S. Diversity 3	PY 201 3
Elective 3	PO 104 3
PO 103 3	JR 251 3
BA 174 3	Elective 3
Elective 3	
16	15

Note: Degrees offered: B.A., B.S. Students seeking the B.A. degree are required to demonstrate third semester proficiency in a foreign language. MA 215 is required for the B.S. degree.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

■ **Western Michigan University** (updated 12/02)

A student may major in any one of the following:

Organizational Communication
Interpersonal Communication
Broadcast and Cable Production
Telecommunications Management
Communication Studies
Public Relations
Media Studies
Journalism

High school preparation recommended: college preparatory curriculum.

FIRST YEAR

First Semester	Second Semester
EN 101 .....3	MA 124 .....4
SC 135 .....3	HU 280 .....3
HU 270 .....4	BI 101 .....4
Elective .....3	SO 251 or SS 220 ...3
13	13

SECOND YEAR

First Semester	Second Semester
SC 131 .....3 (except for PR majors)	PL 206 .....3
PL 202 .....3	BI 125 .....3
PY 201 .....3	CO 110 .....3
HS 249 or 250 .....3	Elective .....3
12	12

Notes:

1. Students can transfer a maximum of 12 hrs toward any Communication major, and 9 hours toward the minor. The specific 12 hrs will depend on the major selected.
2. Students are required to obtain a grade of "C" or better in all courses counting toward the major or minor.
3. In addition, students should satisfy the Liberal Education Curriculum Distribution Area requirements and their academic Proficiency described under "Liberal Arts, WMU," or the MACRAO Agreement.

ENGLISH:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Aquinas College** (updated 12/01)

This curriculum provides graduates with the ability to develop a critical sixth sense for recognizing the truly artistic in books, plays, film and television fare. Careers include education, broadcast and print journalism, civil service, law, librarianship, personnel work, public relations and publishing.

FIRST YEAR

First Semester	Second Semester
EN 100 or 101 .....3	EN 102 .....3
MA 104 .....4	MA 124 .....4
PS 110 .....3	Social Science .....3
Elective .....3	EN 233, 235 or 237 ...3
WE .....1	Elective .....3
	WE .....1
14	17

SECOND YEAR

First Semester	Second Semester
Lab Science .....4	Humanities .....3
Social Science .....3	Electives .....9
EN 247 .....3	EN 262 .....3
EN 261 .....3	
Elective .....3	
16	15

continued—

■ Aquinas College - continued

Students completing this program, which fulfills all requirements for an Associate in Arts degree, will have fulfilled the Liberal Education degree requirements at Aquinas College. Upon transfer, they may pursue their major coursework and desired electives, with the exception of one course from the Religious Dimension of Human Existence category and a Global Perspective capstone course in your junior and senior years to total 124 credit hours and earn a Bachelor of Arts with major in English

■ Grand Valley State University (updated 12/02)

FIRST YEAR

First Semester	Second Semester
EN 100 or 1013	EN 1023
World Perspective3	MA 1074
Foreign Lang. 1014	Foreign Lang. 102 . . .4
Elective3	PS 1103
WE Activity1	Soc. Sci. Elect.3
14	17

SECOND YEAR

First Semester	Second Semester
WE Activity1	Science Lab4
Foreign Lang. 2314	EN 2623
U. S. Diversity3	Soc. Sci. Elect.7
EN 2813	Electives6
EN 2613	
14	17

Notes:

1. Degree offered: B.A.
2. Appropriate electives: EN 235, 237.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

LANGUAGES



Arts and Communications

GRCC Educational Choices:

Associate in Arts (MACRAO Agreement)

*Contact: Counseling Department
(616) 234-4130*

MODERN LANGUAGES:

Transfer Opportunities:

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Grand Valley State University

■ Ferris State University

■ Western Michigan University

PERFORMING ARTS



Arts and Communications

GRCC Educational Choices:

Associate in Arts (MACRAO Agreement)

Associate in Music

Associate in Arts With a Major in Music

Contact: Music Department
(616) 234-3940

MUSIC:

Suggested GRCC Program: Associate in Music

This program is designed for students wishing to major in applied music (performance areas) and/or those wishing to major in Music Education (public and non-public school music teaching areas) and involves a minimum of four years of study.

High school preparation recommended: College preparatory curriculum; plus the study of an instrument or voice.

The agreement provides that a student who receives the Associate of Arts degree from GRCC, and who is accepted as a transfer student by a signatory senior college or university, would not be required to pursue further freshman or sophomore level general education requirements at the signatory four-year college or university.

It is important to understand that if the Associate in Arts degree, with a major in music is selected, the student will transfer with the MACRAO completed, but will be behind in the music courses expected of students who have completed their sophomore year. Students who attend the senior institution for all four years, do not complete all of the general education requirements by the end of the sophomore year. It is the belief of the music faculty at GRCC that the Associate in Music option is much better as it completes the music requirements that most sophomores should have, while completing two-thirds of the general education requirements.

An alternative to transferring with course deficiencies in either music, or general education classes, is the Associate in Arts degree, with the major in music, three year option. This option would allow the student to complete the Associate in Arts degree, with the MACRAO stamp and also complete the 45 hours of music required to successfully transfer with the music skills needed to be considered at the junior level.

Whether the student transfers at junior level is contingent upon many factors. Grades in classes are not the least of these. Although the grade of D will count at GRCC toward graduation, they may not transfer. Students who achieve A/B work at GRCC, stand a good chance of transferring at the junior level. (This means in each music class.) Grades below this will mean that students may transfer at the sophomore or freshman levels.

Prior to transfer, most schools will require a battery of examinations. These examinations will take place in the areas of music theory, applied music, piano, and occasionally music history. Upon completion of these exams the transfer institution will determine the level of each student. GRCC grades below A/B will usually mean transferring below the junior level.

First Year

First Semester

		Credits	Contact Hours
MU 101	Music Theory	3	3
MU 178	Aural Comp. 1	1	2
MU 151	Applied Music	2	2
MU 105	Interpretation	1	1
MU 171	Piano Techniques	1	2
	Band OR	1	3
	Orchestra OR	1	2
	Choir	1	3
WE —	Wellness	1	2
EN 101	English Composition	3	3
PS 110	Political Science	3	3

15

Second Semester

MU 102	Music Theory 2	3	3
MU 179	Aural Comp. 2	1	2
MU 152	Applied Music	2	2
MU 105	Interpretation	1	1
MU 172	Piano Technique 2	1	2
MU 235	Music History 1	3	3
	Band OR	1	3
	Orchestra OR	1	2
	Choir	1	3
EN 102	English Composition 2	3	3
	Group I Elective	3	3

18

Second Year

Third Semester

MU 201	Music Theory 3	3	3
MU 208	Aural Comp. 3	1	2
MU 161	Applied Music	2	2
MU 105	Interpretation	1	1
MU 236	Music History 2	3	3
MU 173	Piano Technique 3	1	2
	Band OR	1	3
	Orchestra OR	1	2
	Choir	1	3
	Group II Elective	3	3

15

Fourth Semester

MU 202	Music Theory 4	3	2
MU 209	Aural Comp. 4	1	2
MU 162	Applied Music	2	2
MU 105	Interpretation	1	1
MU 237	Music History 3	3	3
MU 174	Piano Technique 4	1	2
	Band OR	1	3
	Orchestra OR	1	2
	Choir	1	3
	Group III Elective	3	3

15

Total Credits

63

continued—

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Grand Valley State University (updated 12/02)

FIRST YEAR

First Semester	Second Semester
MU 101 .....3	MU 102 .....3
MU 151 .....2	MU 235 .....3
MU 171 .....1	MU 152 .....2
MA 107 .....4	MU 172 .....1
MU 191, 194, or 195 ...1	EN 102 .....3
MU 105 .....1	World Perspective ...3
EN 100 or 101 .....3	Social Science .....3
PS 110 .....3	
18	18

SECOND YEAR

First Semester	Second Semester
MU 201 .....3	MU 202 .....3
MU 208 .....1	MU 209 .....1
MU 236 .....3	MU 162 .....2
MU 161 .....2	MU 174 .....1
MU 173 .....1	Science Lab .....4
U. S. Diversity .....3	Humanities .....3
WE .....1	WE .....1
Soc. Sci. Elect. ....3	
17	15

Notes:

1. Transfer students are required to complete a minimum of 30 hours at GVSU, which include at least eight hours in applied music, three hours in major ensembles, and nine additional hours in music to be determined by the advisor.
2. Degrees offered: B.A., B.M., and B.M.E.
3. Each applicant will be required to arrange a personal audition with the Music Department.
4. All students will be required to take a theory placement exam and a keyboard placement exam.
5. All majors must fulfill the department recital and Music Major Seminar attendance requirements, fulfill the keyboards musicianship requirements, and perform one or two faculty-approved recitals, as appropriate to the degree program selected.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

MUSIC EDUCATION:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Western Michigan University (updated 12/02)

This program is designed for students wishing to major in applied music (performance areas), and/or for those wishing to major in Music Education (public school music teaching areas). It involves a minimum of four years of study.

High school preparation recommended: college preparatory program; plus the study of an instrument or voice.

First Semester	Second Semester
MU 101 .....3	MU 102 .....3
MU 178 .....1	MU 179 .....1
MU 151 .....2	MU 235 .....3
MU 111 or 171 .....1	MU 152 .....2
MU 191, 194, 195 .....1	MU 112 or 172 .....1
MU 105 .....1	MU 191, 194, 195 ...1
EN 101 .....3	MU 105 .....1
PS 110 .....3	EN 102* .....3
CD 118 or 120 .....3-4	Prof. III (math) .....3
18-19	18
Third Semester	Fourth Semester
MU 201 .....3	MU 202 .....3
MU 208 .....1	MU 209 .....1
MU 236 .....3	MU 237 .....3
MU 161 .....2	MU 162 .....2
MU 121 or 173 .....1	MU 122 or 174 .....1
MU 191, 194, 195 .....1	MU 191, 194, 195 ...1
MU 105 .....1	MU 105 .....1
Elect. (Distrib. II) ....3	Elect. (Distrib. VI) ...3
BI 125 .....3	MU 291 .....1
19	17

* Not necessary for WMU degree.

Credit in applied music, theory, history and keyboard may be granted by the University upon auditions and examinations in these areas.

Notes:

1. Music Ensembles 190 through 195 shall be transferable as ensemble credit. A maximum of five credits in ensembles may be transferred.
2. All schools of music which are accredited by N.A.S.M. require a series of proficiency placement examinations for transferring students. These are usually held at one time and include such areas as: Applied Music major, conducting, keyboard, harmony, music theory, etc. Students should make arrangements to visit WMU and take these placement examinations during their last semester in residence at GRCC.
3. Piano Techniques 171 through 174 should be included if the student has had little or no piano study.
4. Admission to any music major is by audition, held in November, February, and March. Contact WMU's Music Advising Office the year prior to transfer at (269) 387-4672.
5. Michigan Test for Teacher Certification (MTTC)—Basic Skills recommended in the second semester, prior to entry at WMU.
6. Students who wish to begin their upper level professional education sequence must have all the pre-education requirements met and an application (College of Education) on file no later than January 15. Admission to upper level will be granted only once a year. If a student misses the deadline and/or has not completed all the pre-education requirements, they may enroll for all other required courses in their program except upper level education courses.
7. Contact WMU College of Education advising for complete list of Pre-Education (WED) requirements.

■ **Central Michigan University (CMU)** (updated 12/02)

This program is designed for students who wish to major in applied music (performance areas) and/or those wishing to major in music education (public and non-public school music teaching areas). It involves a minimum of four years of study.

High school preparation: college prep program. Prior study of an instrument or voice are strongly recommended.

FIRST YEAR	
First Semester	Second Semester
MU 101 .....3	MU 102 .....3
MU 178 .....1	MU 179 .....1
MU 151 .....2	MU 152 .....2
MU 105 .....1	MU 105 .....1
MU 171 .....1	MU 172 .....1
MU 194 or 195 .....1	MU 235 .....3
PS 110 .....3	MU 194 or 195 .....1
WE .....1	MU 182 .....1
EN 101 .....3	EN 102 .....3
	Elective (Group I) ...3
16	19

SECOND YEAR	
First Semester	Second Semester
MU 201 .....3	MU 202 .....3
MU 208 .....1	MU 209 .....1
MU 161 .....2	MU 162 .....2
MU 105 .....1	MU 105 .....1
MU 236 .....3	MU 237 .....3
MU 173 .....1	MU 174 .....1
MU 194 or 195 .....1	MU 194 or 195 .....1
WE .....1	Elective (Group III) ...3
MU 185 .....1	
Elective (Group II) ...3	
18	17

Music Core Courses

There are two ways in which music courses may transfer to CMU. The course may transfer as the exact equivalent to a CMU course. In this instance, it will be assigned the appropriate CMU course number. Another possibility is that the course may transfer as general MUS CR. This will be the case if the course is in a sequence which requires a placement exam or if the relationship to a CMU course is unclear. If a course transfers as MUS CR, it is not usable on a major until authorized by the director or assistant director of the School of Music. This is normally done as part of the admission procedure for transfer students. Please read the School of Music Transfer Student Guide for more details.

continued—

■ Central Michigan University - continued

Music Theory

GRCC Course	CMU Equivalent
MU 101 and 1784	MUS CR 3 and MUS CR 1
MU 102 and 1794	MUS CR 3 and MUS CR 1
MU 201 and 2083	MUS CR 3 and MUS CR 1
MU 202 and 2093	MUS CR 3 and MUS CR 1

Authorization of the appropriate number of hours will be allowed pending results of the theory placement exam.

Music History and Literature

GRCC Course	CMU Equivalent
MU 2353	MUS 2113
MU 2363	MUS 2123
MU 2373	MUS 3113

Class Keyboard

GRCC Course	CMU Equivalent
MU 1711	MUS CR1
MU 1721	MUS CR1
MU 1731	MUS CR1
MU 1741	MUS CR1

Applied Music

GRCC Course	CMU Equivalent
MU 1512	MUS CR2
MU 1522	MUS CR2
MU 1612	MUS CR2
MU 1622	MUS CR2

Ensembles

GRCC Course	CMU Equivalent
MU 1910-4	MUS 1830-4
MU 1940-4	MUS 1850-4
MU 1950-4	MUS 1860-4

Competency Requirements

CMU expects its graduates to demonstrate competency in three areas: English Composition, Mathematics and Speech. A grade of "C" or better in the following GRCC courses will fulfill these competency requirements.

English EN 101* and 102

Math MA 107 or higher (except MA 121, 138, 210, 211, 298, 299)

Speech SC 131, 135, 227 or 241

* Must earn a "B" or better in this course for

ELECTIVES (listed by groups):

Group I: Humanities

A minimum of 8 semester hours in at least two of the following subject areas:

AR 111; AT 105, 106, 115, 205; EN 233 or higher;
Foreign Language; HU; PL; TH 240, 248;
SC (any courses except SC 171, 172, 291-299)

Group II: Social Sciences

A minimum of 8 semester hours in at least two of the following subject areas:

AN; CJ 111, 140, 235, 237 EC; GE; HS; PS (except 098);
PY (except 105); SS 115; SO

Group III: Natural Sciences

A minimum of 8 semester hours in at least two of the following subject areas:

BA 254; CM (any course except CM 090, 100, 222);
CO 124, 131, 225; GE 132; GL; MA (any course except
MA 003 ,004, 005, 090, 092, 104, 105 and 138);
PC (except 139, 281); PH; PY 281; TE 104, 132

Additional Music Education Degree (BME)

Students are required to present evidence of at least 90 clock hours of experience working with children or youth prior to their admission to the Teacher Education Program. Please note that 45 of these hours must be done in a classroom setting. The BME degree requires admission to the CMU Teacher Education Program. A minimum 2.7 CMU GPA must be established to be considered for admission to this program. The Teacher Education Program is a limited enrollment program. Further admission requirements should be obtained from the CMU Teacher Education Student Services Office, 203 Ronan Hall, (989) 774-3308, and are found in the Teacher Education Program section of the CMU Bulletin

■ Aquinas College

MUSIC MERCHANDISING:

Transfer Opportunities:

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Ferris State University (FSU) (updated 12/02)

The departments of music and business of GRCC and FSU are announcing a 2+2 transfer agreement. This agreement involves the transfer of the Associate in Music degree with an emphasis in Music Merchandising from GRCC to the Bachelor of Science in Business with a major in Music Industry Management.

Big Rapids Campus

See printable Transfer Guide at:

www.ferris.edu/admissions/transfer/webpages/

For more information, contact:

Educational Counselor, Rebecca Kowalkoski

Phone: (231) 591-2420

e-mail: kowalkob@ferris.edu**RECORDING TECHNOLOGY: (Code 212)****Suggested GRCC Program:****Associate in Music with an emphasis in Recording Technology**

Besides core courses in music theory, aural comprehension, applied music, interpretation, piano, and ensembles, the Recording Technology student must complete courses in two other areas: recording technology and sequencing.

The four-semester course sequence in Recording Technology begins with Basic Studio Recording Techniques 1 and 2 (MU 154 and MU 155 respectively). These courses will provide the student with the fundamentals of the recording arts, including basic audio signal and acoustics theory, recording consoles, microphone design and technique, signal processing, multitrack studio production technique, and digital audio technology and its integration into music production.

The sequence continues with Advanced Studio Techniques 1 and 2 (MU 254 and MU 255 respectively). These courses will provide the student with an in-depth examination of the principles and applications of digital audio in today's recording and interactive media industries. Topics include digital audio fundamentals, recording and reproduction systems theory, computer-based recording and editing, and audio for CD-ROM and other new media applications.

In Basic Sequencing MU 283 and Advanced Sequencing MU 284, students will study a variety of music sequencing software packages, examining common and special features, positioning sequencing in a historical perspective to computer composition and electronic music, exploring the close relationship between MIDI hardware and music sequencers. MU 284 will establish a good working knowledge of one specific form of sequencing software by editing events and controllers, editing audio, working with notation and lyrics, mixing and effects patching, and improving audio performance.

First Year**First Semester (Fall)**

		Contact
	Credits	Hours
MU 101	Introduction to Music Theory 1	3
MU 105	Music Interpretation	1
MU 151	Applied Music Major	2
MU 154	Basic Studio Techniques 1	4 5
MU 171	Piano Techniques 1	1 2
MU 178	Aural Comprehension 1	1 2
MU —	Ensemble	1 2
		13

Second Semester (Winter)

MU 102	Introduction to Music Theory 1	3	3
MU 105	Music Interpretation	1	1
MU 152	Applied Music Major	2	2
MU 155	Basic Studio Techniques 2	4	5
MU 172	Piano Techniques 2	1	2
MU 179	Aural Comprehension 2	1	2
MU —	Ensemble	1	2
WE —	Wellness	1	2
		14	

Second Year**Third Semester (Fall)**

BA 101	Business and Technical English 1	OR	
EN 101	English Composition 1	3	3
MU 173	Piano Techniques 3	1	2
MU 254	Advanced Studio Techniques 1	3	4
MU 283	Basic Sequencing	3	3
SC 135	Interpersonal Communications	3	3
		13	

Fourth Semester (Winter)

BA 102	Business and Technical English 2	OR	
EN 102	English Composition 2	3	
EL 144	Basic Electricity and Electronics	4	6
MU 174	Piano Techniques 4	1	2
MU 255	Advanced Studio Techniques 2	3	4
MU 284	Advanced Sequencing	3	3
SC 293	Seminar in Speech - Small Group	3	3
		17	

Third Year**Fifth Semester (Fall)**

MA 107	Intermediate Algebra	4	4
PC 141	Science of Sound	4	6
PS 110	Survey of American Government	3	3
PY 201	General Psychology	3	3
		14	

Total Credits**73**

Note: Upon completion of the Associate in Music degree with an emphasis in Recording Technology at Grand Rapids Community College, the student may begin work toward the Bachelor of Science Degree with an emphasis in Recording Technology at Ferris State University.

VISUAL ARTS



Arts and Communications

GRCC Educational Choices:

Associate in Arts (MACRAO Agreement)

Contact: *Counseling Department*
(616) 234-4130

ARCHITECTURE:

Transfer Opportunities:

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **University of Michigan-Central Campus**

■ **Lawrence Tech**

■ **University of Detroit Mercy**

ART AND DESIGN:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters.

Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Grand Valley State University** (updated 12/02)

FIRST YEAR

First Semester	Second Semester
EN 100 <i>or</i> 1013	EN 1023
MA 1074	Elective3
Humanities3	AT 1303
PS 1103	Science Lab4
AT 1403	Elective3
16	16

SECOND YEAR

First Semester	Second Semester
AT 1413	AT 2222
AT 2142	AT 1063
World Perspective Elect. .3	AT 2152
U.S. Diversity Elect. . .3	Soc. Sci. Elect.4
Humanities3	Soc. Sci. Elect.3
WE Activity1	WE Activity1
15	15

Notes:

1. All transfer credit for studio courses is by portfolio review.
2. Degrees offered: B.F.A., B.A., B.S. Students seeking the B.A. degree must demonstrate third semester proficiency in a foreign language. Students seeking the B.S. degree should take MA 215 and CO 110.
3. Accreditation: National Association of Schools of Art and Design.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives

■ **Western Michigan University**

■ **Ferris State University**

■ **Kendall College of Art and Design**

PHOTOGRAPHY:

Suggested GRCC Program:

Associate in Arts (MACRAO)

This curriculum is designed for students who wish to major in Photography or photo-mechanical related fields.

FIRST YEAR

First Semester	Second Semester
EN 100 or 101 3	EN 102 3
CM 101 or 103 4	PC 151 4
PO 103 3	PO 104 3
PO 105 3	PO 110 3
PS 110 3	Social Science 3
16	16

SECOND YEAR

First Semester	Second Semester
PO 210 3	PO 250 3
PO 220 3	Electives* 5
PO 230 3	WE 1
PO 240 3	Humanities Elect. 6
Soc. Sci. Elect. 3	
15	15

Suggested Electives: AT 105, 106; PY 201, 233, 251, 281

Notes:

- Other courses not listed under the groups above may be used for electives. Consult with the GRCC Counseling Center of the GRCC Photography Department for appropriate selection.
- All students should contact the institution to which they are planning to transfer and request their catalog. It is the student's responsibility to check their program of study at GRCC against the program of the school to which they will apply for transfer.
- If a student enrolls as a transfer from another institution with advanced credit status, programming should be effected with the help of a departmental advisor.



Business, Management, Marketing and Technology

Business, Management, Marketing, and Technology

Do you enjoy being a leader, organizing people, planning activities, and talking? Do you like to work with numbers or ideas? Do you enjoy carrying through with an idea and seeing the end product? Do you like things neat and orderly?

This program of study relates to all aspects of business including accounting, business administration, finance, information processing, and marketing. Examples of careers in this pathway include accountants, business managers, and auto salespersons. You may be interested in this career if you're good with math, enjoy being the leader of a club or captain of a team, and express the following personality qualities:

- ◆ Assertive
- ◆ Self-confident
- ◆ Ambitious
- ◆ Sociable
- ◆ Persuasive
- ◆ Power/Prestige
- ◆ Wealth
- ◆ Practical
- ◆ Confronting
- ◆ Extroverted
- ◆ Efficient
- ◆ Dependable
- ◆ Orderly
- ◆ Security

Careers related to all aspects of business and marketing are:

- ◆ Human Resources Director
- ◆ Realtor
- ◆ Restaurant Manager
- ◆ Life Insurance Agent
- ◆ Executive
- ◆ Buyer
- ◆ Marketing Executive
- ◆ Sales Worker
- ◆ Market Research Analyzer
- ◆ Purchasing Agent
- ◆ Elected Public Official
- ◆ Beautician
- ◆ Chamber of Commerce
- ◆ Travel Agent
- ◆ Store Manager
- ◆ Investments Manager
- ◆ Airport Manager

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ACCOUNTING



**Business Management, Marketing,
and Technology**

GRCC Educational Choices:

Associate in Business

**Contact: Accounting/Office Administration
(616) 234-4220**

ACCOUNTING: (Code 128)

Suggested GRCC Program:

Associate in Business

This program prepares students for full-charge positions in the accounting department of small businesses and for support positions in larger firms in both financial and manufacturing accounting. The program includes a thorough study of the accounting cycle, cost accounting, tax accounting, budgeting, inventory valuation, and statement analysis. Business law, written and oral communications, and computer applications are included in the course work.

To be eligible to receive an Associate in Business degree—Accounting program, a student must meet the course and credit requirements. Transfer credits may be used to meet graduation requirements; however, a degree candidate must complete at least six credits in accounting from GRCC with a “C” or better.

Advanced standing credit can be granted for BA 133 to graduates of high school programs that are members of the Kent Metropolitan Articulation Project.

The following recommendations are presented as a guide. Courses may be taken in any order, as long as all the listed requirements (including prerequisites) are met.

Note: This program is designed for career entry and/or advancement in selected fields. It is not intended to be a transfer program. Students planning to transfer should see a counselor or faculty advisor concerning transfer options.

SUGGESTED SEQUENCE:

First Year

First Semester

		Credits	Contact Hours
BA 101	Business and Technical English 1*	3	3
BA 103	Introduction to Business	4	4
BA 133	Business Word Processing 1 ** (8 weeks)	2	2
BA 150	Business Mathematics OR	4	4
BA 254	Business Statistics	(3)	3
BA 256	Principles of Accounting 1	4	4
		<u>16/17</u>	

Second Semester

BA 102	Business and Technical English 2*	3	3
BA 145	Computer Applications in Business 1	4	4
BA 160	Computerized Accounting 1	2	2
BA 257	Principles of Accounting 2	4	4
BA 260	Computerized Accounting 2	2	2
WE —	Wellness Elective	1	2
		<u>16</u>	

Second Year

Third Semester

		Credits	Contact Hours
BA 207	Business Law 1	3	3
BA 262	Cost Accounting	3	3
BA 268	Tax Accounting	3	3
BA 283	Business Management	3	3
BA —	Business Elective***	3	3
		<u>15</u>	

Fourth Semester

BA 201	Business Communications	3	3
BA 264	Intermediate Accounting	3	3
PS 110	Survey of American Government	3	3
— —	General Business Electives****	6	6
		<u>15</u>	
Total Credits		62/63	

* EN 101 and EN 102 may be substituted for BA 101 and BA 102 to satisfy program requirements.

** Students who have not passed a formal keyboarding or typewriting course must enroll in BA 130 Keyboarding before taking BA 133. Students who have passed one year of high school keyboarding or typewriting with at least a grade of “C” may waive BA 133. **Since waiver is without credit, students must take an equivalent number of elective credits to satisfy graduation requirements.** It is strongly recommended, however, that students who have had no formal training in word processing enroll in BA 133.

*** While any BA course will fulfill this elective requirement, BA 209 and BA 288 are recommended.

**** While any course will fulfill this elective requirement, EC 251 and/or EC 252 are recommended.

Transfer Opportunities:

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Davenport University**

BUSINESS

**Business Management, Marketing,
and Technology**

GRCC Educational Choices:**Associate in Business**

**Contact: General Business Department
(616) 234-4220**

**BUSINESS
ADMINISTRATION: (Code 102)****Suggested GRCC Program: Associate in Business**

This program allows students the widest possible latitude in choosing courses and an area of specialization in business.

Graduates of this program should be eligible for jobs as assistant managers, management trainees, and a wide range of other entry-level positions in various business enterprises.

GRCC also offers more specialized degree and certificate programs in business. These include Accounting, Management and Supervision, Marketing, and Office Administration Studies. Even greater specialization is available through the Fashion Merchandising, Interiors and Furnishings, and Landscape Management programs.

To be eligible to receive an Associate in Business degree—Business Administration program, a student must meet the course and credit requirements. Transfer credits may be used to meet graduation requirements; however, a degree candidate must complete at least six credits in Business Administration from GRCC with a “C” or better.

The following recommendations are presented as a guide. Courses may be taken in any order, as long as all the listed requirements (including prerequisites) are met.

Note: This program is designed for career entry and/or advancement in selected fields. It is not intended to be a transfer program. Students planning to transfer should see a counselor or faculty advisor concerning transfer options.

SUGGESTED SEQUENCE:**First Year**

First Semester		Credits	Contact Hours
BA 101	Business and Technical English 1 #	3	3
BA 103	Introduction to Business	4	4
BA 133	Business Word Processing 1 ** (8 weeks)	2	2
BA 150	Business Mathematics OR	4	4
BA 254	Business Statistics	3	3
— —	General Elective	4	
		16/17	

Second Semester

BA 102	Business and Technical English 2 #	3	3
BA 145	Computer Applications in Business 1	4	4
BA 282	Organizational Behavior	3	3
PS 110	Survey of American Government	3	3
		13	

Second Year**Third Semester**

BA 156	Accounting Fundamentals OR	(3)	3
BA 256	Principles of Accounting 1	4	4
BA 183	Supervision	3	3
BA 201	Business Communications	3	3
BA 207	Business Law 1	3	3
BA —	Business Elective	3	
WE —	Wellness Elective	1	
		16/17	

Fourth Semester

BA 209	Issues in Business Ethics	3	3
BA 270	Marketing	3	3
BA 283	Business Management	3	3
BA —	Business Elective	4/5	5
— —	General Elective	3/4	
		16/17	

Total Credits 62/64

** Students who have not passed a formal keyboarding or typewriting course must enroll in BA 130 Keyboarding before taking BA 133. Students who have passed one year of high school keyboarding or typewriting with at least a grade of “C” may waive BA 133. **Since waiver is without credit, students must take an equivalent number of elective credits to satisfy graduation requirements.** It is strongly recommended, however, that students who have had no formal training in word processing enroll in BA 133. BA 133 is available as a challenge exam.

Some colleges require EN 101 and EN 102 for a bachelor's degree; therefore EN 101 and EN 102 may be substituted for BA 101 and BA 102 to satisfy program requirements.

continued—

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Grand Valley State University (updated 12/02)

Students pursuing the Bachelor of Business Administration (B.B.A.) degree, offered by the Seidman School of Business at GVSU, can major in one or two of the following: Accounting, Business Economics (general or real estate emphasis), Finance, General Business, International Business, Management (general, human resources, operations or organizational information systems emphasis), and/or Marketing.

FIRST YEAR

First Semester	Second Semester
EN 100 or 101 .....3	EN 102 .....3
BA 256 .....4	BA 257 .....4
PS 110 .....3	Humanities .....3
Humanities .....3	BA 145 or CO 110 ..4
MA 107 .....4	World Perspectives ...3
	WE .....1
17	18

SECOND YEAR

First Semester	Second Semester
EC 251 .....3	EC 252 .....3
BA 270 .....3	BA 254,
	MA 215, or PY 281 ...3
BA 207 .....3	U.S. Diversity .....3
Science Lab .....4	MA 110, 129, 131
Humanities .....3	or PL 202 .....3-5
WE .....1	BA 283 .....3
17	15-17

Notes:

1. Degree offered: B.B.A.
2. After earning 55 semester hours with a minimum 2.7 grade point average, students are admitted to the upper-division business program at the Seidman School of Business.

Students who have earned fewer than 55 semester credit hours are admitted to the Seidman pre-business program and must complete general requirements. During their junior and senior years, students will take a variety of business administration courses in different areas to give them a strong general business and administration background. Additionally, they will complete courses applicable to one of the specific majors offered. For additional information, please call the Seidman Undergraduate School services office at (616) 336-7500.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

■ Ferris State University-Grand Rapids (updated 12/02)

This curriculum is for students seeking positions in business. High school preparation recommended: College preparatory curriculum; mathematics through trigonometry.

FIRST YEAR

First Semester	Second Semester
EN 100 or 101 .....3	EN 102 .....3
SC 131 or 135 .....3	BA 257 .....4
PS 110 .....3	MA 107 or 110 ....4
BA 256 .....4	CO 161 .....3
BA 103 .....4	WE .....1
17	15

SECOND YEAR

First Semester	Second Semester
EC 251 .....3	EC 252 .....3
Laboratory Science ...4	BA 270 .....3
BA 283 .....3	BA 282 .....3
BA 207 .....3	BA 254 .....3
Humanities .....3-4	Humanities .....3-4
WE .....1	
17-18	15-16

A student who completes the four semester plan of courses above, with "C" grades or above in all classes, will have completed all requirements for the Associate in Arts degree under the MACRAO agreement.

This degree program in Grand Rapids is considered "3+1," meaning that students who have completed their Associate's degree will be able to earn additional credits at Grand Rapids Community College under a dual enrollment arrangement with FSU-Grand Rapids. Of the 126 credits required for the Bachelor's degree, at least 30 credits must be completed at FSU-Grand Rapids. The degree is also transferable to the main campus in Big Rapids as well as the FSU-Grand Rapids program located in the ATC Building, room 182; phone (616) 451-4777. Additional information is also available at www.ferris.edu/grandrapids.

■ **Central Michigan University (CMU)** (updated 12/02)

Students wishing to pursue Business Administration at Central Michigan University should earn an Associate degree with a concentration in Business Administration from GRCC by completing the following classes:

EN 101*	3
EN 102*	3
Lab. Science	3-4
BA 254 or MA 215	3/4
MA 127 and 129 or MA 133*	4-5
EC 251	3
EC 252	3
PS 110	3
SC 131, 135, 227 or 241*	3
PL 209	3
Humanities	3
BA 256	4
BA 257	4
BA 145	4
BA 201	3
BA 283	3
WE	0-2
Electives	5-9
Total	60-62

Notes:

1. Students must earn a 2.5 GPA or higher to be eligible for this program.
 2. Students will be granted admission to Professional Business Studies as soon as they begin coursework at CMU. Continued admission requires students to earn 2.5 or higher GPA during their first semester and have any additional courses required for admission completed.
 3. Students are required to earn at least 124 semester credit hours in order to graduate from CMU (Accounting and Accounting Information Systems majors must earn 126 hours to graduate).
- * CMU requires a "C" or better.

■ **Western Michigan University** (updated 12/02)

This curriculum is for students seeking positions in business. High school preparation recommended: College preparatory curriculum; mathematics through trigonometry.

FIRST YEAR

First Semester	Second Semester
EN 100 or 101*3	EN 1023
BA 2823	Lab Science4
MA 110, 127, or 1294-5	CO 110 or BA 145* .3/4
BA 103*4	PS 1103
14-15	BA 2703
	16/17

SECOND YEAR

First Semester	Second Semester
BA 256*4	BA 2574
EN 2493	BA 2543
EC 2513	Humanities3-4
PY 201 or SO 2513	EC 2523
Humanities3	
16	13-14

* A "C" grade or higher is required in these courses for acceptance into the College of Business. Students should complete an Associate in Arts Degree at GRCC (62 total credits).

Visit spider.hcob.wmich.edu for more information.

LANDSCAPE MANAGEMENT: (Code 652)

Suggested GRCC Program:

Certificate, Associate in Applied Arts and Sciences, and/or Associate in Arts

This program is offered in cooperation with the Institute of Agricultural Technology, Michigan State University.

Created with input from industry professionals, the Landscape and Lawn Management curriculum is based on the MSU Landscape and Nursery Program. It combines the business, mathematics, science and communications courses of GRCC with courses and technical expertise offered by MSU faculty in the areas of horticulture, soil science and turf-grass management.

The green industries offer an interesting variety of career choices to individuals with knowledge and technical skills. Graduates of the Landscape and Lawn Management Program will be prepared for employment in landscape and turfgrass management for commercial, residential and public sites. Landscape managers use their knowledge of plant growth and development, plant identification, pruning, fertilization, integrated pest management and problem solving to maximize the beauty of outdoor spaces. Exciting careers are also available in landscape design, landscape construction, plant production and retail sales. Increasing public interest in gardening and the environment has resulted in a great demand for educated individuals to fill these positions.

The Landscape and Lawn Management program also includes courses that offer individuals working in the industry a chance to sharpen technical skills, keep informed of the latest research and regulatory information and improve management practices.

The Landscape and Lawn Management program also includes courses that offer individuals working in the industry a chance to sharpen technical skills, keep informed of the latest research and regulatory information and improve management practices.

continued—

Enrollment Options

Students who participate in the Landscape and Lawn Management Program may choose to earn a Certificate from the MSU Institute of Agricultural Technology, and an Associate of Applied Arts and Sciences, or Associates in Arts degree from GRCC. The program incorporates courses from MSU and GRCC, making it possible to earn the Certificate and the Associate's degree simultaneously. All high school graduates are welcome to participate in the program.

To earn a Certificate from MSU, students must apply for admission to the MSU Institute of Agricultural Technology and complete a 48 credit hour program of courses which includes a professional internship.

To earn an Associates of Applied Arts and Sciences or Associates in Arts degree, students must enroll in the GRCC Landscape and Lawn Management Program, and complete an additional 18-20 credit hours of GRCC courses.

MSU Enrollment and Registration

Enrolling in the MSU Institute of Agricultural Technology is easy. Simply call MSU West (616-485-6805) or an MSU program advisor for more information and an application. Transfer credits may be available for students with previous college experience.

Once an MSU student number has been obtained, registration takes just a few minutes. Simply telephone the MSU West office to sign up for courses. All MSU courses in the program are offered in the evening, at convenient locations near downtown Grand Rapids. Academic advising is offered by MSU Department of Horticulture faculty at the MSU West office prior to each semester.

Individuals who are not pursuing a degree or certificate may enroll for MSU courses under the Michigan State University Lifelong Education Program. This option allows students to earn college credits without formally applying for admission. A non-credit option is also available for most courses at a reduced rate.

GRCC Enrollment and Registration

GRCC offers a variety of options for registration. Applications for admission are available from the GRCC Admissions office. Students enrolling in evening, weekend, off-campus or telecourse classes may register in person, by telephone or mail. All other students should register in person at GRCC.

Instructions and timelines for registration are included in course schedule booklets published each semester. The booklets are available in several locations including the offices of the Registrar and Enrollment Management Services, the Academic Support and Counseling Center, and the Information Office.

For More Information, Contact:

MSU Program and Academic Advising:

Program Coordinator (517) 432-3381 or
Dr. Eunice Foster (517) 355-0190
Institute of Agricultural Technology
Michigan State University
120 Agriculture Hall
East Lansing, Michigan 49924

MSU Application Forms, Registration and Scheduling:

Dawn Meredith (616) 458-6805
MSU West
Commerce Building Suite 110
5 Lyon Street, NW
Grand Rapids, MI 49503-3123

GRCC Program and Academic Advising:

Karen Holt (616) 234-4130
Grand Rapids Community College
143 Bostwick Avenue, NE
Grand Rapids, MI 49503-3295

Disability accommodations for MSU courses may be requested by calling MSU West at (616) 458-6805. Please call at least two weeks ahead to insure sufficient time to make arrangements. Requests received less than two weeks in advance will be met when possible.

MSU is an affirmative-action, equal opportunity institution.

Michigan State University and Grand Rapids Community College curriculums for MSU Landscape & Nursery Certificate through the Landscape & Lawn Management program, and GRCC Associate in Applied Arts and Sciences degree; or Associate in Arts degree.

- MSU-GRCC Landscape and Lawn Management program (48 credits) *and*
- Associate in Applied Arts and Sciences (minimum of 66 credits) *and/or*
- Associate in Arts degree (minimum of 68 credits)

GRCC Department/MSU Certificate Requirements

(in addition to College Req.)

GRCC College Requirements:

Wellness Education	1 credit	Business	16 credits
English	6 credits	Mathematics	min. 3 credits
Humanities*	6-8 credits	Computer	min. 2 credits
Social Science	8 credits	MSU coursework	24 credits
Natural Science/Math	8 credits		

MANAGEMENT AND SUPERVISION: (Code 127)

Suggested GRCC Program: Associate in Business

Students are prepared for managerial responsibilities in business by studying both fundamentals of business operations and human relations.

Graduates of this program should be eligible for jobs as assistant managers, management trainees, and a wide range of other entry-level positions in various business enterprises.

To be eligible to receive an Associate in Business degree—Management and Supervision program, a student must meet the course and credit requirements. Transfer credits may be used to meet graduation requirements; however, a degree candidate must complete at least six BA (business course) credits from Grand Rapids Community College with a “C” or better.

Advanced standing credit can be granted for BA 133 to graduates of high school programs that are members of the Kent Metropolitan Articulation Project.

The following recommendations are presented as a guide. Courses may be taken in any order, as long as all the listed requirements (including prerequisites) are met.

Note: This program is designed for career entry and/or advancement in selected fields. It is not intended to be a transfer program. Students planning to transfer should see a counselor or faculty advisor concerning transfer options.

SUGGESTED SEQUENCE:

First Year

First Semester		Credits	Contact Hours
BA 101	Business and Technical English 1 #	3	3
BA 103	Introduction to Business	4	4
BA 133	Business Word Processing 1 ** (8 weeks)	2	2
BA 282	Organizational Behavior	3	3
PS 110	Survey of American Government	3	3
		<u>15</u>	

Second Semester

BA 102	Business and Technical English 2 #	3	3
BA 145	Computer Applications in Business 1	4	4
BA 150	Business Mathematics OR	4	4
BA 254	Business Statistics	(3)	3
BA 183	Supervision	3	3
BA 207	Business Law 1	3	3
		<u>16/17</u>	

Second Year

Third Semester

BA 201	Business Communications	3	3
BA 208	Business Law 2	3	3
BA 256	Principles of Accounting 1 ##	4	4
BA 283	Business Management	3	3
WE —	Wellness Elective	1	
		<u>14</u>	

Fourth Semester

BA 209	Issues in Business Ethics OR	3	3
BA 285	Total Quality Management	(3)	3
BA 245	Records Management	3	3
BA 257	Principles of Accounting 2	4	4
BA 284	Human Resources Management OR	3	3
BA 286	Small Business Management	(3)	3
— —	General Elective	4	
		<u>17</u>	

Total Credits 62/63

** Students who have not passed a formal keyboarding or typewriting course must enroll in BA 130, Keyboarding, before taking BA 133. Students who have passed one year of high school keyboarding or typewriting with at least a grade of "C" may waive BA 133. **Since waiver is without credit, students must take an equivalent number of elective credits to satisfy graduation requirements.** It is strongly recommended, however, that students who have had no formal training in word processing enroll in BA 133.

Students who have a limited background in math or accounting and who may experience difficulties succeeding in BA 256 should first complete BA 156.

Some colleges require EN 101 and EN 102 for a bachelor's degree; therefore, EN 101 and EN 102 may be substituted for BA 101 and BA 102 to satisfy program requirements.

Transfer Opportunities:

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Davenport University

MARKETING: (Code 116)

Suggested GRCC Program: Certificate

This two-semester program prepares students for basic positions such as salesperson and retailer. All of the courses taken in this program can be applied toward an associate degree. The job outlook for marketing and sales occupations continues to be good.

The following recommendations are presented as a guide. Courses may be taken in any order, as long as all the listed requirements (including prerequisites) are met.

SUGGESTED SEQUENCE:

First Semester		Credits	Contact Hours
BA 150	Business Mathematics	4	4
BA 172	Sales	3	3
BA 174	Advertising	3	3
— —	Business Elective	4	
		<u>14</u>	

Second Semester

BA 145	Computer Applications in Business 1	4	4
BA 170	Principles of Retailing	3	3
BA 180	Cooperative Education in Business 1	3	3
BA 270	Marketing	3	3
— —	Business Elective	3	
		<u>16</u>	

Total Credits 30

continued—

MARKETING: (Code 125)**Suggested GRCC Program:** Associate in Business

Both classroom experience and on-the-job learning are part of this program, which prepares students for positions in retailing, advertising, sales and related fields.

The job outlook for marketing and sales occupations continues to be good.

To be eligible to receive an Associate in Business degree—Marketing program, a student must meet the course and credit requirements. Transfer credits may be used to meet graduation requirements; however, a degree candidate must complete at least six BA (business course) credits from Grand Rapids Community College with a “C” or better.

Advanced standing credit can be granted for BA 133 to graduates of high school programs that are members of the Kent Metropolitan Articulation Project.

The following recommendations are presented as a guide. Courses may be taken in any order, as long as all the listed requirements (including prerequisites) are met.

Note: This program is designed for career entry and/or advancement in selected fields. It is not intended to be a transfer program. Students planning to transfer should see a counselor or faculty advisor concerning transfer options.

SUGGESTED SEQUENCE:**First Year****First Semester**

		Credits	Contact Hours
BA 101	Business and Technical English 1 #	3	3
BA 103	Introduction to Business	4	4
BA 133	Business Word Processing 1 ** (8 weeks)	2	2
BA 172	Sales	3	3
BA —	Business Elective	3	3
WE —	Wellness Elective	1	2
		16	

Second Semester

BA 102	Business and Technical English 2 #	3	3
BA 145	Computer Applications in Business 1	4	4
BA 150	Business Mathematics OR	4	4
BA 254	Business Statistics	(3)	3
BA 170	Principles of Retailing	3	3
BA 174	Advertising	3	3
		16/17	

Second Year**Third Semester**

		Credits	Contact Hours
BA 256	Principles of Accounting 1 ##	4	4
BA 270	Marketing	3	3
BA 282	Organizational Behavior	3	3
BA —	Business Elective	2	2
PS 110	Survey of American Government	3	3
		15	

Fourth Semester

BA 180	Cooperative Education in Business 1	3	3
BA 183	Supervision OR	3	3
BA 283	Business Management	3	3
BA 201	Business Communications	3	3
BA 208	Business Law 2	3	3
BA 272	Marketing Problems	3	3
		15	

Total Credits**62/63****Business Electives**

BA 106	Starting a Business	2/2
BA 153	Personal Finance	3/3
BA 209	Issues in Business Ethics	3/3
BA 284	Human Resource Management	3/3
BA 285	Small Business Management	3/3

** Students who have not passed a formal keyboarding or typewriting course must enroll in BA 133, Keyboarding. Students who have passed one year of high school keyboarding or typewriting with at least a grade of “C” may waive BA 133. **Since waiver is without credit, students must take an equivalent number of elective credits to satisfy graduation requirements.** It is strongly recommended, however, that students who have had no formal training in word processing enroll in BA 133.

Students who have a limited background in math or accounting and who may experience difficulties succeeding in BA 256 should first complete BA 156.

Some colleges require EN 101 and EN 102 for a bachelor’s degree; therefore, EN 101 and EN 102 may be substituted for BA 101 and BA 102 to satisfy program requirements.

Transfer Opportunities:

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Davenport University

COMPUTERS



Business Management, Marketing, and Technology

GRCC Educational Choices:

Associate in Applied Arts and Sciences

Contact: *Computer Applications Department*
(616) 234-3670

COMPUTER APPLICATIONS: (Code 108)

Suggested GRCC Program: Certificate

This one-year program provides students with skills to operate and use computers in business environments. It is intended mainly to serve people who do not wish to earn an associate degree but who want to acquire skill and knowledge in computer applications.

Students entering the program are expected to possess full command of English, mathematics skills through high school algebra, and a minimum touch keyboarding level of 25 words a minute. Students lacking such skills may acquire them by taking GRCC's Computer Keyboarding, BA 130, before enrolling in the program. Strict adherence to the ethics of computer usage is expected of all Computer Applications students.

All of the courses in this program can be applied toward an associate degree. See the description of the Computer Applications Technology program (Code 109) for a list of associate degree requirements. Some advanced standing credit may be granted to entering graduates of high school vocational programs that are members of the Kent Metropolitan Articulation Project.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Semester		Credits	Contact Hours
CO 101	Introduction to Computer Applications	2	2
CO 105	Windows Operating System	2	2
CO 110	Introduction to Computer Information Systems	3	3
CO 116	Introduction to Programming	3	3
CO 120	Using Graphics Software	2	2
CO 151	Electronic Spreadsheet	1	1
CO 153	Personal Computer Word Processing	1	1
CO 230	Introduction to Telecommunications	2	2
		<u>16</u>	

Second Semester

CO 124	BASIC Programming	3	3
CO 140	Multimedia Presentations	2	2
CO 170	Introduction to Database Applications	2	2
CO 162	Introduction to Desktop Publishing	2	2
CO 180	Cooperative Education in Computer Applications 1	3	3
CO 245	Using the Internet	3	3
		<u>15</u>	
Total Minimum Credits		31	

COMPUTER APPLICATIONS TECHNOLOGY: (Code 109)

Suggested GRCC Program:

Associate in Applied Arts and Sciences

The Computer Applications Technology program trains technicians for employment in business, industry, research and education. The purpose of the program is to equip people to select, install, use, and help others to use, computer systems in any environment. Thus, it concentrates on the uses of computers in several different contexts. Among these are business, telecommunications, graphic arts and education.

Students in this program will study database management, BASIC programming and telecommunications. This curriculum can serve as a springboard into the computer programmer and computer systems analyst fields.

Students entering the program are expected to possess full command of English, mathematics skills through high school algebra, and a minimum touch keyboarding level of 25 words a minute. Students lacking such skills may acquire them by taking GRCC's Computer Keyboarding, BA 130, before enrolling in the program. Strict adherence to the ethics of computer usage is expected of all Computer Applications students.

Some advanced standing credit may be granted to entering graduates of high school vocational programs that are members of the Kent Metropolitan Articulation Project.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Year

First Semester		Credits	Contact Hours
BA 101	Business and Technical English 1 OR	3	3
EN 100	College Writing OR	3	4
EN 101	English Composition 1	3	3
CO 101	Introduction to Computer Applications	2	2
CO 110	Introduction to Computer Information Systems	3	3
CO 116	Introduction to Programming	3	3
WE —	Wellness Elective	1	2
PS 110	Survey of American Government	3	3
		<u>15</u>	

continued—

COMPUTER APPLICATIONS TECHNOLOGY - cont.**Second Semester**

BA 102	Business and Technical English 2	OR	3	3
EN 102	English Composition 2		3	3
BA 256	Principles of Accounting 1	OR	(4)	4
BA 156	Accounting Fundamentals		3	3
CO 105	Windows Operating System		2	2
CO 124	BASIC Programming		3	3
CO 151	Electronic Spreadsheet		1	1
CO 153	Personal Computer Word Processing		1	1
CO 230	Introduction to Telecommunications		2	2
			<hr/>	
			15/16	

Second Year**Third Semester**

			Credits	Contact Hours
BA 283	Business Management		3	3
CO 120	Using Graphic Software		2	2
CO 170	Introduction to Database Software		2	2
CO 224	Systems Analysis - Electronic Data Processing		3	3
PE —	Physical Education Elective		1	2
SC 131	Fundamentals of Public Speaking		3	3
CO —	Computer Elective		2	2
			<hr/>	
			16	

Fourth Semester

BA 201	Business Communication	OR	3	3
SC 135	Interpersonal Communication		3	3
CO 140	Multimedia Presentations		2	2
CO 145	Using the Internet		3	3
CO 162	Introduction to Desktop Publishing		2	2
CO 233	Local Area Networking		2	2
CO 180	Cooperative Education in Computer Applications 1		3	3
— —	Elective(s)		2	
			<hr/>	
			17	

Total Credits	63/64
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Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many

other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Ferris State University**■ **Davenport University****COMPUTER INFORMATION SYSTEMS:****Suggested GRCC Program:****Associate in Applied Arts and Sciences or Associate in Arts**

The Computer Information Systems program provides students with the courses needed to seek employment as local area network administrators and providers of some types of technical support; the program also prepares students for transfer into four-year baccalaureate degree programs in computer programming, leading to careers in programming, systems analysis (and development), consulting, and management in computer information systems.

The employment outlook for careers in this growing, dynamic, technologically rich field is likely to remain strong. Students seeking work immediately upon graduation from GRCC should expect to find employment in smaller organizations or in supporting roles in line departments of larger organizations. Students expecting lifelong employment in programming and beyond should plan on a minimum of a four-year degree, with career opportunities thereafter dependent on job performance, and perhaps additional education.

Students following a Computer Information Systems program may qualify for either the Associate in Applied Arts and Sciences degree or the Associate in Arts degree, which most transfer institutions require. Those who wish to earn the Associate in Arts should be sure to meet the communications, humanities, social science, and natural science requirements for that degree. Students seeking the Associate in Applied Arts degree should strongly consider a Cooperative Education or a Practicum course as part of the degree electives.

Strict adherence to the ethics of computer usage is expected of all Computer Applications students.

The following courses may be taken in any order and at any time they are available as long as prerequisites are met. However, students are expected to confer with their faculty advisor and to base choices on both their own goals and the strength of their previous work experience. A minimum of 60 academic credits are needed for graduation.

SUGGESTED SEQUENCE:**Computer Information Systems-Programming (Code 149)**

This degree provides students with the courses needed to seek employment as a computer programmer or transfer to a four-year school as a programming major. The student may seek an Associate in Arts (AA) or an Associate in Applied Arts and Sciences (AAAS).

The AA degree is a transfer degree, requiring English classes taken from the English Department (EN) rather than from the Business Department (BA). GRCC participates in a Three Plus One baccalaureate program with some universities. Under this program, students take their first three years at GRCC and the fourth year at the participating university.

Students with advanced degrees may also be employed as computer information managers, consultants, systems analysts and developers.

First Year

		Credits	Contact Hours
EN 100	College Writing* OR	3	4
EN 101	English Composition 1* OR	3	3
BA 101	Business and Technical English 1*	3	3
CO 101	Introduction to Computer Application Systems	2	2
CO 105	Windows Operating System	2	2
CO 116	Introduction to Programming	3	3
PS 110	Survey of American Government	3	3
— —	Natural Science Elective: Intermediate Algebra (MA 107) Suggested for Transfer	4	
		<u>17</u>	

Second Semester

EN 102	English Composition 2* OR	3	3
BA 102	Business and Technical English 2*	3	3
CO 110	Introduction to Computer Information Systems	3	3
CO 124	BASIC Programming 1	3	3
CO 230	Introduction to Telecommunications	2	2
SC 131	Fundamentals of Public Speaking**	3	3
EC 251	Principles of Economics 1 (If you lack business experience, first take BA 103, Introduction to Business)	3	3
		<u>17</u>	

Second Year

Third Semester

CO 171	Database Design and Development	3	3
CO 127	C/C++ Programming	3	3
CO 225	Advanced BASIC Programming 2	3	3
PL 202	Introduction to Logic ** OR	3	3
— —	Foreign Language	(4)	
EC 252	Principles of Economics 2 (Micro)	3	3
		<u>15/16</u>	

Fourth Semester

CO 224	Systems Analysis - Electronic Data Processing	3	3
CO 227	Object Oriented Programming OR	3	3
CO 243	Advanced COBOL Programming	3	
EN 249	Technical Writing **	3	3
— —	Natural Science Elective (including lab)	4	7
WE —	Wellness Elective	1	
		<u>14</u>	
Total Credits		63/64	

* EN courses are required for the Associate in Arts degree and for transfer students.

** Fulfills three hours of the Group 1 – Humanities requirement.

SUGGESTED SEQUENCE:

Computer Information Systems- Applications Software (Code 146)

This degree provides students with the courses needed to seek employment in the field of computer applications. The student may seek an Associate in Arts (AA) or an Associate in Applied Arts and Sciences (AAAS).

The AA degree is a transfer degree, requiring English classes taken from the English Department (EN) rather than from the Business Department (BA). GRCC participates in a Three Plus One baccalaureate program with some universities. Under this program, students take their first three years at GRCC and the fourth year at the participating university.

Students with advanced degrees may also be employed as computer information managers.

First Year

		Credits	Contact Hours
EN 100	College Writing* OR	3	3
EN 101	English Composition 1* OR	3	3
BA 101	Business and Technical English 1*	3	3
CO 101	Introduction to Computer Applications	2	2
CO 105	Windows Operating System	2	2
CO 110	Introduction to Computer Information Systems	3	3
— —	Natural Science Elective: Intermediate Algebra (MA 107) suggested for transfer	4	
WE —	Wellness Elective	1	
		<u>15</u>	

Second Semester

EN 102	English Composition 2* OR	3	3
BA 102	Business and Technical English 2*	3	3
CO 116	Introduction to Programming	3	3
CO 140	Multimedia Presentations	2	2
CO 151	Electronic Spreadsheet	1	1
CO 153	Personal Computer Word Processing	1	1
CO 230	Introduction to Telecommunications	2	2
SC 131	Fundamentals of Public Speaking**	3	3
		<u>15</u>	

Second Year

Third Semester

CO 124	BASIC Programming	3	3
CO 170	Introduction to Database Software	2	2
CO 162	Introduction to Desktop Publications	2	2
PS 110	Survey of American Government	3	3
PL 202	Introduction to Logic **	3	3
EC 251	Principles of Economics 1 (If you lack business experience, first take BA 103, Introduction to Business)	3	3
		<u>16</u>	

continued—

Fourth Semester

CO 224	Systems Analysis - Electronic Data Processing	3	3
CO 233	Local Area Networking	2	2
EN 249	Technical Writing**	3	3
EC 252	Principles of Economics 2	3	3
— —	Natural Science Elective (including lab)	4	
CO —	Computer Elective	1	
		<hr/>	
	Total Credits	16	62

* EN courses are required for the Associate in Arts degree and for transfer students.

** Fulfills three hours of the Group 1 – Humanities requirement.

SUGGESTED SEQUENCE:**Computer Information Systems-
Network Administration (Code 147)**

This degree provides students with the courses needed to seek employment in the following areas: Local Area Network (LAN) Support, Network Administrator, Telecommunications Analyst. The student may seek an Associate in Arts (AA) or an Associate in Applied Arts and Sciences (AAAS).

The AA degree is a transfer degree, requiring English classes taken from the English Department (EN) rather than from the Business Department (BA). GRCC participates in a Three Plus One baccalaureate program with some universities. Under this program, students take their first three years at GRCC and the fourth year at the participating university.

Students with advanced degrees may also be employed as a network engineer or systems/applications security manager.

First Year**First Semester**

		Credits	Contact Hours
EN 100	College Writing* OR	3	4
EN 101	English Composition 1* OR	3	3
BA 101	Business and Technical English 1*	3	3
CO 101	Introduction to Computer Applications	2	2
CO 105	Windows Operating System	2	2
CO 110	Introduction to Computer Information Systems	3	3
CO 116	Introduction to Programming	3	3
— —	Natural Science Elective: Intermediate Algebra (MA 107) suggested to transfer	4	
		<hr/>	
		17	

Second Semester

EN 102	English Composition 2 * OR	3	3
BA 102	Business and Technical English 2*	3	3
CO 132	UNIX Operating System	2	2
CO 224	Systems Analysis - Electronic Data Processing	3	3
CO 230	Introduction to Telecommunications	2	2
EC 251	Principles of Economics 1 (If you lack business experience, first take BA 103, Introduction to Business)	3	3
SC 131	Fundamentals of Public Speaking**	3	3
		<hr/>	
		16	

Second Year**Third Semester**

CO 142	UNIX Shell Programming	2	2
CO 231	Wide Area Networking (WAN) Theory	3	3
CO 233	Local Area Networking	2	2
PL 202	Introduction to Logic**	3	3
EC 252	Principles of Economics 2	3	3
WE —	Wellness Elective	1	
		<hr/>	
		14	

Fourth Semester

CO 232	UNIX System Administration	2	2
CO 234	Advanced Local Area Networking	2	2
EN 249	Technical Writing **	3	3
PS 110	Survey of American Government	3	3
— —	Natural Science Electives (including lab)	4	
— —	Elective	1	
		<hr/>	
	Total Credits	15	62

* EN courses are required for the Associate in Arts degree and for transfer students.

** Fulfills three hours of the Group 1 – Humanities requirement.

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Ferris State University

(updated 12/02)

FIRST YEAR

First Semester	Second Semester
CO 101	CO 116
CO 110	EN 102
PS 110	Natural Sci. Lab
MA 107	PY 201
WE Activity	WE Activity
<hr/>	<hr/>
16	16

SECOND YEAR

First Semester		Second Semester	
BA 256	.....4	BA 257	.....4
CO 124	.....3	CO 171	.....3
CO 146	.....3	CO 247	.....3
EC 251	.....3	EC 252	.....3
SC 131	.....3	Humanities (200 level)	.....3
	16		16

A student who completes the four semester plan of courses above, with "C" grades or above in all classes, will have completed all requirements for the Associate in Arts degree under the MACRAO agreement.

This degree program in Grand Rapids is considered "3+1," meaning that students will be able to earn additional credits at Grand Rapids Community College under a dual enrollment arrangement with FSU-Grand Rapids. Of the 126 credits required for the Bachelor's degree, at least 30 credits must be completed at FSU-Grand Rapids. The degree is also transferable to main campus in Big Rapids as well as the FSU-Grand Rapids program located in the ATC building, room 182. Phone (616)451-4777.

Big Rapids Campus

See printable *Transfer Guide* at:

www.ferris.edu/admissions/transfer/webpages/

For more information, contact:

Educational Counselor, Rebecca Kowalkoski
Phone: (231) 591-2420
e-mail: kowalkob@ferris.edu

■ **Grand Valley State University** (updated 12/02)

FIRST YEAR

First Semester		Second Semester	
EN 100 or 101	.....3	EN 102	.....3
MA 107	.....4	BA 254	.....4
PS 110	.....3	CO 224	.....3
CO 127	.....3	World Perspectives	..3
Soc. Sci./Hum.	.....3	BA 283	.....3
	16		16

SECOND YEAR

First Semester		Second Semester	
WE Activity	.....1	SC 131	.....3
U.S. Diversity	.....3	WE Activity	.....1
BA 256	.....4	Science Lab	.....4
EN 249	.....3	BA 257	.....4
Elective	.....3	MA 110	.....4
	14		16

Note: Degrees offered: B.A., B.S. Students seeking the B.A. degree are required to demonstrate third semester proficiency in a foreign language.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

■ **Western Michigan University**

■ **Davenport University**

OFFICE TECHNICIAN:**GRCC Job Training Choices: (non-credit)**

18 Weeks

Overview:

No matter where you work, it is becoming increasingly important that you have computer operating skills. You need to know how to use the features and functions of the Windows environment, word processing, spreadsheet, database, and presentation software. Computer literacy is a must in today's work environment.

Course Recommendations:

The applicant should demonstrate reading, writing and keyboarding skills. The ability to type/keyboard a minimum of 25 wpm is desired.

Cost:

\$3,600

Course Outline:

(The course will focus on Microsoft software applications.)

- Systems Operations
- Word Processing
- Electronic Spreadsheets
- Data Management
- Report Generation
- Presentation Software
- E-mail and Internet Applications
- Business Communications

Contact Occupational Training

Information: (616) 234-3800

www.grcc.edu

E-mail: training@grcc.edu

ELECTRONIC PUBLISHING: (Code 142)**Suggested GRCC Program:****Certificate in Computer Applications**

Many businesses need to produce documents such as annual reports, estimates, bid specifications, technical drawings, proposals, employee manuals, advertisements, and newsletters. Typists have historically produced much of this material from handwritten drafts or from dictation. With electronic publishing software, it is possible to produce "finished looking" reports directly on a personal computer without needing the services of a typist, typesetter, or print shop.

A person who wants to complete the Certificate in Computer Applications in Electronic Publishing might already be employed and seeking to increase his/her ability to use new technology; or he/she might be a person who seeks entry-level employment producing output from others' drafts. The student who completes this certificate program may continue in existing employment, may seek new employment as a desktop publisher, or may wish to pursue home-based employment as a free-lance worker. Entry-level employment may pay \$7.50–\$8.50 an hour in a variety of industries.

Students may apply all course work from this certificate program to the Associate Degree in Applied Arts and Sciences in Computer Applications Technology (Code 109). Students should make course choices based on career goals, previous experience and personal preference in close consultation with a faculty advisor.

Strict adherence to the ethics of computer usage is expected of all Computer Applications students.

The following required courses may be taken in any order and at any time they are available as long as all prerequisites are met. Thirty credits are required, chosen as follows:

College Course	Credits	Contact Hours
Six credits in writing:		
EN 100 College Writing OR	3	4
EN 101 English Composition 1 OR	3	3
BA 101 Business and Technical English 1 AND	3	3
EN 102 English Composition 2 OR	3	3
BA 102 Business and Technical English 2	3	3
At least 3 credits in advanced writing chosen from:		
EN 243 Essay as Literature 1: A Writing Course	3	3
EN 246 Writing for Publication	3	3
EN 247 Creative Writing	3	3
JR 251 Introduction to Journalism	3	3
At least 8 credits in art and design chosen from:		
AT 130 Two Dimensional Design 1	3	6
AT 140 Drawing 1	3	6
AT 141 Drawing 2	3	6
AT 260 Graphic Design 1	3	4
AT 261 Graphic Design 2	3	4
Four credits in desktop publishing:		
CO 162 Introduction to Desktop Publishing	2	2
CO 262 Advanced Desktop Publishing	2	2

College Course	Credits	Contact Hours
At least 9 credits in computer applications chosen from:		
CO 101 Introduction to Computer Applications	2	2
CO 105 Windows Operating System	2	2
CO 110 Introduction to Computer Information Systems	3	3
CO 120 Using Graphics Software	2	2
CO 151 Electronic Spreadsheet	1	1
CO 153 Personal Computer Word Processing	1	1
CO 180 Cooperative Education in Computer Applications 1	3	3
Total Minimum Credits	30	

MCCVLC-NETWORK SPECIALIST: (Code 148)**Suggested GRCC Program:** Certificate

The Network Specialist certificate program is an on-line program to prepare students for jobs such as PC Support Technician, Network Support Analyst, Network Specialist, and UNIX Administrator. Students in the Network Specialist certificate program take their classes from several community colleges through the Michigan Community College Virtual Learning Collaborative (MCCVLC). The courses in this curriculum were developed in a partnership between Grand Rapids, Northwestern, Oakland, and Henry Ford Community Colleges. The entire certificate program is designed to be earned through on-line classes. However, students may take some classes on-line and others on-ground if that is their preference. The Grand Rapids Community College equivalent on-ground courses are listed where applicable. Students enroll in the courses offered by GRCC through the usual enrollment process.

Courses offered by other colleges are accessed through www.mccvlc.org

Note: Some of the courses are still under development and do not yet have course numbers.

The following is the program plan for the Network Specialist Certificate:

MCCVLC Course	Credits	GRCC Equivalency	Provider College
CO 265 Introduction to PCs/PC Repair	3	Same	GRCC
CIS 213 Networks: An Introduction	2	CO 233	NMC
CIS 225 Network + Certification Test Preparation	2	N/A	NMC
CO 234 Introduction to Netware Administration	2	Same	GRCC
CIS 116 Advanced Netware Administration	2	N/A	HFCC
CIS — CompTia A+ Certification Test Preparation	3	N/A	HFCC
CIS 123 UNIX Operating Systems	3	CO 105 & CO 132	NMC
CIS — UNIX Administration	2	CO 232	NMC
CIS 215 Windows 2000 Server	3	N/A	NMC
OIS 231 Professional Communications	3	BA 102	NMC
Total Credits	25		

MULTIMEDIA COMMUNICATION TECHNOLOGIES: (Code 145)

Suggested GRCC Program:

Associate in Applied Arts and Sciences or Associate in Arts

The Multimedia Communication Technologies program provides students an opportunity to prepare for practical careers in fields that use computer-based digital equipment as production and delivery media. Based on a core of courses emphasizing the integrated use of text and graphics, as well as sound and animation in communication media, the curriculum allows the student to prepare for employment in one or more of these areas: writing and copy production, illustration and commercial imaging, video and multimedia communication. The curriculum emphasizes the complete process: initial concept, idea development, creation and modification of digital pieces, final production, and delivery of the product.

With the use of the computer as a communication medium constantly expanding, persons pursuing a degree in one of the specialization areas of this program may already be employed in a career that requires them to extend their communication skills; or they may be seeking to build a foundation of entry-level job skills. Employers list communication skills and problem-solving ability as the two most important general characteristics of prospective employees.

Students in Multimedia Communication Technologies may qualify for either the Associate in Applied Arts degree or the Associate in Arts degree, which most transfer institutions require. Those who wish to earn the Associate in Arts should be sure to meet the communications, humanities, social science and natural science requirements for that degree.

Strict adherence to the ethics of computer usage is expected of all Computer Applications students.

The following courses may be taken in any order and at any time they are available as long as prerequisites are met. However, students are expected to confer with their faculty advisor and to base choices on both their own goals and the strength of their previous work experience. A minimum of 60 academic credits are needed for graduation.

College Course	Contact Credits	Hours
Six required credits in writing:		
BA 101 Business and Technical English 1* OR	3	3
EN 100 College Writing* OR	3	4
EN 101 English Composition 1* AND	3	3
BA 102 Business and Technical English 2* OR	3	3
EN 102 English Composition 2*	3	3

Twenty-two credit hours from the following core:

BA 206 Copyright and Communication Law	2	2
CO 101 Introduction to Computer Applications	2	2
CO 105 Windows Operating System	2	2
CO 110 Intro to Computer Information Systems	3	3
CO 120 Using Graphics Software	2	2
CO 140 Multimedia Presentations	2	2
CO 161 Introduction to Database Applications	3	3
CO 166 Interactive Multimedia	2	2
CO 230 Introduction to Telecommunications	2	2
EN 249 Technical Writing	3	3

At least fifteen credit hours from one of the following areas of specialization:

Commercial Writing:

BA 172 Sales	3	3
BA 174 Advertising	3	3
BA 201 Business Communications	3	3
CO 162 Introduction to Desktop Publishing	2	2
CO 262 Advanced Desktop Publishing	2	2
EN 246 Writing for Publication	3	3
JR 251 Introduction to Journalism	3	3
JR 254 Mass Media	3	3

Commercial Imaging:

AT 140 Drawing	3	6
AT 130 Two Dimensional Design 1	3	6
AT 260 Graphic Design 1	3	4
AT 261 Graphic Design 2	3	4
BA 174 Advertising	3	3
CO 122 Computerized Illustration	2	2
CO 162 Introduction to Desktop Publishing	2	2
CO 262 Advanced Desktop Publishing	2	2
PO 103 Introduction to Photography	3	4

Video and Multimedia:

CO 122 Computerized Illustration	2	2
CO 124 BASIC Programming	3	3
CO 150 Introductory Computer Animation	2	2
CO 250 Three-D Computer Animation	3	3
JR 254 Mass Media	3	3
MU 144 Music, Sound, and Computers (MIDI)	2	2
PO 252 Introduction to Television Production	3	

* EN courses are required for the Associate in Arts degree and for transfer students.

SUGGESTED SEQUENCES:

SPECIAL DEGREE TRACKS—

- Commercial Writing
- Commercial Imaging
- Video and Multimedia

continued—

MULTIMEDIA COMMUNICATIONS TECHNOLOGY DEGREE TRACKS—

Commercial Writing

First Year

First Semester

		Credits	Contact Hours
EN 100	College Writing* OR	3	4
EN 101	English Composition 1* OR	3	3
BA 101	Business and Technical English 1*	3	3
CO 101	Introduction to Computer Applications	2	2
CO 105	Windows Operating System	2	2
PS 110	Survey of American Government	3	3
SC 135	Interpersonal Communication **	3	3
— —	Natural Science Elective: Intermediate Algebra (MA 107) Suggested for Transfer	4	
		<hr/>	
		17	

Second Semester

EN 102	English Composition 2* OR	3	3
BA 102	Business and Technical English 2*	3	3
CO 110	Introduction to Computer Information Systems	3	3
CO 120	Using Graphics Software	2	2
CO 230	Introduction to Telecommunications	2	2
BA 206	Copyright and Communication Law	2	2
WE —	Wellness	1	
— —	Social Science Elective	3	
		<hr/>	
		16	

Second Year

Third Semester

CO 140	Multimedia Presentations	2	2
CO 170	Introduction to Database Software	2	2
CO 162	Introduction to Desktop Publishing	2	2
EN 249	Technical Writing **	3	3
JR 251	Introduction to Journalism OR		
BA 201	Business Communications	3	3
— —	Social Science Elective	3	
		<hr/>	
		15	

Fourth Semester

CO 166	Interactive Multimedia	2	2
CO 262	Advanced Desktop Publishing	2	2
BA 172	Sales	3	3
BA 174	Advertising OR	3	3
JR 254	Mass Media	3	3
EN 246	Writing for Publication **	3	3
— —	Natural Science Elective: Science of Optics and Photography (PC 151) recommended	4	6
		<hr/>	
		17	

Total Credits **65**

* EN courses are required for the Associate in Arts degree and for transfer students.

** Fulfills three hours of the Group 1 – Humanities requirement.

Commercial Imaging

First Year

First Semester

		Credits	Contact Hours
EN 100	College Writing * OR	3	4
EN 101	English Composition 1 * OR	3	3
BA 101	Business and Technical English 1*	3	3
CO 101	Introduction to Computer Applications	2	2
CO 105	Windows Operating System	2	2
AT 140	Drawing 1	3	6
SC 135	Interpersonal Communication **	3	3
— —	Natural Science Elective: Intermediate Algebra (MA 107) Suggested for Transfer	4	
		<hr/>	
		17	

Second Semester

EN 102	English Composition 2 * OR		
BA 102	Business and Technical English 2*	3	3
CO 110	Introduction to Computer Information Systems	3	3
CO 120	Using Graphics Software	2	2
CO 230	Introduction to Telecommunications	2	2
AT 130	Two Dimensional Design 1	3	6
WE —	Wellness	1	
— —	Social Science Elective	3	
		<hr/>	
		17	

Second Year

Third Semester

CO 122	Computerized Illustration	2	2
CO 140	Multimedia Presentations	2	2
CO 170	Introduction to Database Software	2	2
CO 162	Introduction to Desktop Publishing	2	2
AT 260	Graphic Design 1	3	4
— —	Social Science Elective	3	
PS 110	Survey of American Government	3	3
		<hr/>	
		17	

Fourth Semester

BA 174	Advertising OR	3	3
AT 261	Graphic Design 2	3	4
BA 206	Copyright and Communication Law	2	2
CO 166	Interactive Multimedia	2	2
CO 262	Advanced Desktop Publishing	2	2
EN 249	Technical Writing **	3	3
— —	Humanities Elective	2	
— —	Natural Science Elective: Science of Optics and Photography (PC 151) recommended	4	
		<hr/>	
		18	

Total Credits **69**

* EN courses are required for the Associate in Arts degree and for transfer students.

** Fulfills three hours of the Group 1 – Humanities requirement.

Video and Multimedia

First Year

First Semester

		Credits	Contact Hours
EN 100	College Writing* OR	3	4
EN 101	English Composition 1* OR	3	3
BA 101	Business and Technical English 1*	3	3
CO 101	Introduction to Computer Applications	2	2
CO 105	Windows Operating System	2	2
PS 110	Survey of American Government	3	3
SC 135	Interpersonal Communication **	3	3
— —	Natural Science Elective: Intermediate Algebra (MA 107) Suggested for Transfer	4	
		<hr/>	
		17	

Second Semester

EN 102	English Composition 2* OR	3	3
BA 102	Business and Technical English 2*	3	3
CO 110	Computer Information Systems	3	3
CO 120	Using Graphics Software	2	2
CO 124	BASIC Programming	3	3
— —	Natural Science Elective: Science of Optics and Photography (PC 151) recommended	4	
WE —	Wellness	1	
		<hr/>	
		16	

Second Year

Third Semester

CO 122	Computerized Illustration	2	2
CO 140	Multimedia Presentations	2	2
MU 144	Music, Sound, and Computers (MIDI)	2	2
CO 150	Introductory Computer Animation	2	2
CO 170	Introduction to Database Software	2	2
EN 249	Technical Writing **	3	3
— —	Social Science Elective	3	
		<hr/>	
		16	

Fourth Semester

BA 206	Copyright and Communication Law	2	2
CO 166	Interactive Multimedia	2	2
CO 230	Introduction to Telecommunications	2	2
CO 250	Three-Dimensional Computer Animation	3	3
PO 252	Introduction to Television Production	3	
— —	Humanities Elective	3	
— —	Social Science Elective	3	
		<hr/>	
		18	
Total Credits		<hr/>	
		67	

* EN courses are required for the Associate in Arts degree and for transfer students.

** Fulfills three hours of the Group 1 – Humanities requirement.

Transfer Opportunities:

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the

order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Grand Valley State University**

■ **Ferris State University**

■ **Davenport University**

UNIX SYSTEM ADMINISTRATION: (Code 143)

Suggested GRCC Program:

Certificate in Computer Applications

UNIX is a multi-user computer operating system that is becoming increasingly popular. Its effective application requires the expertise of professionals thoroughly familiar with its details. This one-year certificate program is aimed at students who are or want to be professionals in the computer information systems field. Students who are employed may wish to upgrade their skills or prepare for advancement.

Students who complete the certificate in UNIX System Administration will be prepared to program and operate computers in a UNIX environment. In addition, they will be prepared to administer, install, configure and fine-tune UNIX-based systems, including mixed brands of computer hardware. They will also be able to use UNIX data communications group commands.

Students may apply all course work in this certificate program to the Associate Degree in Applied Arts and Sciences in Computer Applications Technology (Code 109).

Strict adherence to the ethics of computer usage is expected of all Computer Applications students.

Students should make course choices based on career goals, previous experience and personal preference in close consultation with a faculty advisor.

The following required courses may be taken in any order as long as all prerequisites are met. Thirty-one credits are required, chosen as follows.

Students who have not successfully taken CO 101, Introduction to Computer Applications, or who do not have the equivalent experience, should take CO 101 before enrolling in any of the following classes.

continued—

UNIX SYSTEM**ADMINISTRATION CERTIFICATE - cont.**

College Course		Credits	Contact Hours
All of the following courses:			
CO 105	Windows Operating System	2	2
CO 127	C/C++ Programming	3	3
CO 132	UNIX Operating System	2	2
CO 142	UNIX Shell Programming	2	2
CO 224	Systems Analysis - Electronic Data Processing	3	3
CO 232	UNIX System Administration	2	2
At least 6 credits in programming chosen from:			
CO 124	BASIC Programming	3	3
CO 227	Object Oriented Programming	3	3
CO 225	Advanced BASIC Programming	3	3
At least 4 credits in operating systems/networking chosen from:			
CO 230	Introduction to Telecommunications	2	2
CO 231	Wide Area Networking (WAN) Theory	3	3
CO 233	Local Area Networking	2	2
At least 9 credits in management/decision making chosen from:			
BA 282	Organizational Behavior	3	3
BA 283	Business Management	3	3
CO 110	Introduction to Computer Information Systems	3	3
CO 171	Database Design and Development	3	3
CO 245	Using the Internet	3	3
Total Credits		33	

INTERNET DEVELOPMENT**Suggested GRCC Program:** Certificate**Web Technical Support (Code 162)****Web Design/Development (Code 163)**

These one year programs provide students with the technical skills required to develop, design and publish web sites. It is intended to serve people who do not wish to earn an associate degree but who want to acquire skill and knowledge in web development. These classes will prepare students to be professionally certified as a Certified Webmaster Professional. All of the courses in this program can be applied toward an associate's degree.

See the 2003-04 Year-long schedule for more information on these two programs.

INTERNET DEVELOPMENT**Suggested GRCC Program:****Associate in Applied Arts and Sciences or Associates in Arts**

The Internet Development program provides students with the courses they need to seek employment as Internet professionals. The program has two specialized curricula: design/development

(Code 160) and technical support. (Code 161). The design focus prepares students for positions where they will use creative components to develop pages and sites, administer and maintain the content of text and graphics within sites, and apply creative design principles to develop efficient, marketable web sites.

The technical focus prepares students for jobs on the server side of the web such as: structure and system administration, programming, database connectivity, and security and privacy design.

Students with this degree may also transfer into four-year programs in the same field or related fields such as Computer Information Systems (CIS), Computer Science (CS), Business, or Applications Development.

**FASHION
AND INTERIORS****Business Management, Marketing,
and Technology****GRCC Educational Choices:****Associate in Applied Arts and Sciences**

Contact: *General Business Department*
(616) 234-4220

**FASHION
MERCHANDISING: (Code 121)****Suggested GRCC Program:****Associate in Applied Arts and Sciences**

This program combines elements of clothing design, clothing construction, textiles and marketing. Its primary purpose is to provide a thorough background to students interested in jobs in fashion retailing.

In selling clothing and apparel, the salesperson's job is to create an interest in the merchandise. The salesperson may answer questions about the construction and care of an article, and may show various models, colors and fabrics.

Graduates of the Fashion Merchandising program find employment that involves selling and buying fashions, creating displays, consulting with customers, arranging fashion shows and advertising. The job outlook in retail sales continues to be very good.

Retail selling remains one of the few fields in which able employees may advance at a fast pace. Some sales workers are promoted to jobs as buyers, department managers, or store managers. Others, particularly in large stores, may advance to administrative work in areas such as personnel or advertising.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met. Class sizes are limited.

First Year

First Semester

			Credits	Contact Hours
BA 101	Business and Technical English 1**	OR	3	3
EN 100	College Writing	OR	3	4
EN 101	English Composition 1		3	3
FM 105	Introduction to Fashion and Interiors		3	3
FM 107	Clothing Selection and Design		3	4
FM 110	Textiles		3	3
FM 122	Merchandising Mathematics	OR	4	4
BA 256	Principles of Accounting 1 (transfer)	OR	3/4	4
BA 156	Accounting Fundamentals (degree seeking)		3	3
WE —	Wellness Elective		1	2
			16/17	

Second Semester

BA 102	Business and Technical English 2**	OR	3	3
EN 102	English Composition 2		3	3
BA 170	Principles of Retailing		3	3
FM 108	Clothing Construction		3	6
IF 115	Consumer Buying and Home Management		4	4
FM 289	Fashion Seminar*	OR FM 290	1	1
PS 110	Survey of American Government		3	3
			17	

Second Year

Third Semester

FM 180	Cooperative Education in Fashion Merchandising 1		3	3
FM 230	Display and Visual Merchandising		4	4
BA 172	Sales		3	3
WE —	Wellness		1	2
FM/IF	Elective		3	
			14	

Fourth Semester

BA 270	Marketing		3	3
FM 181	Cooperative Education in Fashion Merchandising 2		3	3
FM 220	Fashion Promotion		4	4
FM 228	Computer Assisted Fashion Design		3	4
FM 289	Fashion Exploration*	OR FM 290	1	1
FM/IF	Elective		1	1
			15/16	

Total Credits **62/64**

* Fashion Seminar is a one-week field experience in New York City (FM 289) or Chicago (FM 290). A suitable elective may be substituted.

** Some colleges require EN 101 and EN 102 for a bachelor's degree; therefore EN 101 and EN 102 may be substituted for BA 101 and BA 102 to satisfy program requirements.

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Central Michigan University (CMU)** (updated 12/02)

This curriculum is for students who wish to enter the field of fashion merchandising.

High school preparation recommended: college preparatory curriculum.

FIRST YEAR

First Semester	Second Semester
EN 1013	EN 1023
SC 131 or 135, 227, 2413	PS 1103
Natural Sci. Lab4	FM 1083
Elective6	Natural Science4
	Social Science3
16	16

SECOND YEAR

First Semester	Second Semester
MA 1074	Humanities3
Social Science3	Electives10
FM 1103	FM 2283
Elective3	
AT 130, 2603	
16	16

Notes:

1. Electives may be taken toward an optional minor such as psychology, business administration, art, etc.
2. This guide is based upon GRCC's 2002-03 catalog and CMU's 2002-03 catalog. Please contact CMU Admissions for possible changes.
4. CMU and GRCC participate in the MACRAO Agreement. Refer to the section of this catalog entitled General Education for Transfer Students.
5. CMU expects its graduates to demonstrate competency in three areas: English Composition, Mathematics and Speech. A grade of "C" or better in the following GRCC courses fulfills these requirements: EN 101, 102; MA 107 and SC 131, 135, 227, or 241.

INTERIOR DECORATING AND DESIGN: (Code 122)

Suggested GRCC Program:

Associate in Applied Arts and Sciences

This program combines elements of interior design, space planning, furniture design and construction, and marketing. Its primary purpose is to provide a thorough background to students interested in employment in the retail furniture business. In selling items such as furniture, flooring, wall covering and window treatments, the sales worker's primary job is to create an interest in the merchandise. The sales worker may answer questions about the construction of an article, demonstrate its use, and show various finishes, colors, and fabrics.

Graduates of the Interiors and Furnishings program find jobs that involve selling and buying furniture; planning the arrangement of furnishings in home interiors; helping clients choose furnishings, floor coverings and draperies; and estimating costs. They find jobs in department stores, furniture stores, and specialty shops. The job outlook in retail sales continues to be very good.

Retail selling remains one of the few fields in which able employees may advance at a fast pace. Some sales workers are promoted to jobs as buyers, department managers, or store managers. Others, particularly in large stores, may advance to administrative work in areas such as personnel or advertising.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met. Class sizes are limited.

First Year

First Semester

			Credits	Contact Hours
BA 101	Business and Technical English 1**	OR	3	3
EN 100	College Writing	OR	3	4
EN 101	English Composition 1		3	3
FM 105	Introduction to Fashion and Interiors		3	3
FM 110	Textiles		3	3
FM 122	Merchandising Mathematics	OR	4	4
BA 256	Principles of Accounting 1 (transfer)		3/4	4
BA 156	Accounting Fundamentals (degree seeking)		3	3
WE —	Wellness		1	2
			<u>13/14</u>	

Second Semester

BA 102	Business and Technical English 2**	OR	3	3
EN 102	English Composition 2		3	3
BA 170	Principles of Retailing		3	3
IF 115	Consumer Buying		4	4
IF 126	Furniture Design, Construction and Marketing		2	2
IF 127	Drawing Techniques		3	3
IF 289	Interiors Seminar*	OR IF 290	1	1
WE —	Wellness Elective		1	2
			<u>17</u>	

Second Year

Third Semester

			Credits	Contact Hours
IF 117	Housing and Home Furnishings		4	5
FM 230	Display and Visual Merchandising		4	4
IF 180	Cooperative Education in Interiors and Furnishings 1		3	3
IF 228	Computer Assisted Interior Design		3	4
BA 172	Sales		3	3
			<u>17</u>	

Fourth Semester

BA 270	Marketing		3	3
IF 128	Space Planning		3	3
IF 181	Cooperative Education in Interiors and Furnishings 2		3	3
IF 290	Interiors Seminar*	OR IF 289	1	1
PS 110	Survey of American Government		3	3
IF/FM	Elective		2	
			<u>15</u>	

Total Credits 62/63

* Fashion Seminar is a one-week field experience in New York City (IF 289) or Chicago (IF 290). A suitable elective may be substituted.

** Some colleges require EN 101 and EN 102 for a bachelor's degree; therefore EN 101 and EN 102 may be substituted for BA 101 and BA 102 to satisfy program requirements.

TEXTILES AND APPAREL STUDIES:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Western Michigan University (WMU)** (updated 12/01)

GRCC course substitutes* for:**WMU Core Requirements**

CM 101 Chem. in the Modern World. CHEM Req.
 CO 110 Intro. to Computer Info. Systems FCS 225
 EC 252 Principles of Economics ECON 201
 EN 100 or 101 or EN 102 Writing Req.
 FM 105 Intro. to Fashion and Interiors FCS 126
 FM 110 Textiles FCS 220
 IF 115 Consumer Buying FCS 209

Merchandising Emphasis–Required Related Courses

BA 282 Business Management MGMT 250
 BA 256 Principles of Accounting 1 ACTY 210
 BA 270 Marketing MKTG 250
 FM 122 Merchandising Mathematics FCS 226
 FM 180 Co-op Ed. in Fashion Merch. FCS 202
 FM 220 Fashion Promotion FCS 329
 FM 230 Display and Visual Merch. FCS 320

Design and Development–Required Related Courses

FM 108 Clothing Design FCS 124
 PY 201 General Psychology PSY 100
 SC 131 Fund. of Public Speaking COM 104
 or SC 135 Interpersonal Comm. COM 170
 SO 251 Principles of Sociology SOC 200

Design and Development students will choose one of the following options:

Computer Aided Design Option (CAD)

This option allows the student to blend knowledge of fibers, fabrics, pattern making, and construction techniques with the principles of computer graphics technology and software development in CAD/CAM systems operations. The graduate may find employment in the apparel, furniture, or automotive industries in computerized design, pattern development, layout, cutting and construction procedures.

EG 110 Technical Drawing IME 142
 MA 131 MATH 118
 MN 219 and 220 IME 250

Fashion Design Option

Students interested in fashion design must plan on attending their junior year at either the Fashion Institute of Technology in New York (admission subject to selection by FIT based on portfolio submission), or the American College in London as a guest student. Students will transfer a minimum of 24 semester credits of fashion design courses from either of the schools to satisfy this option.

* The course substitutions shown on this guide are acceptable for this curriculum only. It cannot be assumed that these substitutions will be applicable to other curricula. See GRCC/ WMU General Education Transfer Guide for General Education Courses and required proficiencies.

OFFICE ADMINISTRATION



**Business Management, Marketing,
and Technology**

GRCC Educational Choices:

Certificate

Associate in Business

**Contact: Accounting/Office Administration
(616) 234-4220**

EXECUTIVE OFFICE ADMINISTRATION: (Code 112)

Suggested GRCC Program:

Associate in Business

This program prepares students for careers as executive office administrators. It emphasizes thorough preparation in keyboarding, notetaking, word processing, office procedures, and communication skills. Current office technology is used throughout the program.

To be eligible to receive an Associate in Business degree—Office Administration, a student must meet the course and credit requirements. Transfer credits may be used to meet graduation requirements; however, a degree candidate must complete at least six credits in office administration courses from GRCC with a “C” or better.

The following recommendations are presented as a guide. Courses may be taken in any order, as long as all the listed requirements (including prerequisites) are met.

Note: This program is designed for career entry and/or advancement in selected fields. Students planning to transfer should see a counselor or faculty advisor concerning transfer options.

SUGGESTED SEQUENCE:**First Year****First Semester**

		Contact	
		Credits	Hours
BA 136	Business Word Processing 2 **	4	4
BA 140	Notetaking	4	4
BA 145	Computer Applications in Business 1	4	4
BA 103	Introduction to Business	4	4
		<hr/>	
		16	

continued—

EXECUTIVE OFFICE ADMINISTRATION - cont.**Second Semester**

BA 101	Business and Technical English 1	3	3
BA 247	Advanced Computer Applications in Business	4	4
BA 230	Business Word Processing 3	4	4
WE —	Wellness	1	
BA 150	Business Mathematics OR	(4)	
BA 153	Personal Finance	3	
		<u>14/15</u>	

Second Year**Third Semester**

BA 102	Business and Technical English 2	3	3
BA 236	Machine Transcription	2	2
BA 248	Contemporary Office Procedures	3	3
BA —	Business Administration Elective	4	
PS 110	Survey of American Government	3	3
		<u>15</u>	

Fourth Semester

		Credits	Contact Hours
BA 201	Business Communications	3	3
BA 245	Records Management	3	3
BA 282	Organizational Behavior OR	3	3
PY 201	General Psychology	3	3
— —	General Electives (Recommend BA 180, BA 209)	8	
		<u>17</u>	

Total Credits**62/64**

** For students not entering the college with advanced standing credit in BA 136 through the Kent Metropolitan Articulation Project but who can otherwise demonstrate competency in this area, this course may be waived. **Since waiver is without credit, students must take an equivalent number of elective credits to satisfy graduation requirements.**

Cooperative Education in Business (BA 180, BA 181) is recommended for those students without previous office work experience.

Students enrolling in BA 136 must have completed BA 130 and BA 133 or one year of high school keyboarding or typing.

OFFICE ASSISTANT STUDIES: (Code 117)**Suggested GRCC Program: Certificate**

This is a one-year program for students who want quick, basic preparation for office assistant positions in business and industry. Notetaking is required. All of the courses taken in this program can be applied toward an associate degree.

The following recommendations are presented as a guide. Courses may be taken in any order, as long as all the listed requirements (including prerequisites) are met.

SUGGESTED SEQUENCE:**First Semester**

		Credits	Contact Hours
BA 101	Business and Technical English 1	3	3
BA 136	Business Word Processing 2*	4	4
BA 140	Notetaking	4	4
BA 145	Computer Applications in Business 1	4	4
		<u>15</u>	

Second Semester

BA 103	Introduction to Business	4	4
BA 247	Advanced Computer Applications in Business	4	4
BA 230	Business Word Processing 3	4	4
BA 236	Machine Transcription	2	2
BA 248	Contemporary Office Procedures	3	3
		<u>17</u>	

Total Credits**32**

* For students not entering the college with advanced standing credit in BA 136 through the Kent Metropolitan Articulation Project but who can otherwise demonstrate competency in this area, this course may be waived. **Since waiver is without credit, students must take an equivalent number of elective credits to satisfy graduation requirements.**

Students enrolling in BA 136 must have completed BA 130 and BA 133 or one year of high school keyboarding or typing.

LEGAL OFFICE ADMINISTRATION: (Code 119)**Suggested GRCC Program: Associate in Business**

This program is similar to Executive Office Administration, but contains specialized courses so that graduates will be prepared to accept positions as legal office administrators.

Well-trained office administrators, office managers, and executive assistants continue to be in demand in almost all areas of the country.

To be eligible to receive an Associate in Business degree—Office Administration, a student must meet the course and credit requirements. Transfer credits may be used to meet graduation requirements; however, a degree candidate must complete at least six credits in office administration courses from Grand Rapids Community College with a “C” or better.

Advanced standing credit can be granted for BA 133 and BA 136 to graduates of the office education programs in schools that are members of the Kent Metropolitan Articulation Project.

The following recommendations are presented as a guide. Courses may be taken in any order, as long as all the listed requirements (including prerequisites) are met.

Note: This program is designed for career entry and/or advancement in selected fields. Students planning to transfer should see a counselor or faculty advisor concerning transfer options.

SUGGESTED SEQUENCE:**First Year****First Semester**

		Credits	Contact Hours
BA 101	Business and Technical English 1	3	3
BA 140	Notetaking	4	4
BA 145	Computer Applications in Business 1	4	4
BA 207	Business Law 1	3	3
WE —	Wellness	1	
		<u>15</u>	

Second Semester

BA 102	Business and Technical English 2	3	3
BA 136	Business Word Processing 2 **	4	4
BA 247	Advanced Computer Applications in Business	4	4
BA 156	Accounting Fundamentals OR	3	3
BA 256	Principles of Accounting 1	(4)	4
PS 110	Survey of American Government	3	3
		<u>17/18</u>	

Second Year**Third Semester**

		Credits	Contact Hours
BA 208	Business Law 2	3	3
BA 230	Business Word Processing 3	4	4
BA 236	Machine Transcription	2	2
BA 248	Contemporary Office Procedures	3	3
— —	Business Elective	3	
		<u>15</u>	

Fourth Semester

BA 201	Business Communications	3	3
BA 242	Legal Office Applications 2	3	3
BA 245	Records Management	3	3
BA 282	Organizational Behavior OR	3	3
PY 201	General Psychology	3	3
— —	General Elective	3	
		<u>15</u>	

Total Credits 62/63

** For students not entering the college with advanced standing credit in BA 136 through the Kent Metropolitan Articulation Project but who can otherwise demonstrate competency in this area, this course may be waived. Since waiver is without credit, students must take an equivalent number of elective credits to satisfy graduation requirements.

Students enrolling in BA 136 must have completed BA 130 and BA 133 or one year of high school keyboarding or typing.

LEGAL OFFICE ASSISTANT: (Code 139)**Suggested GRCC Program: Certificate**

This one-year certificate program is designed for students who want basic preparation for office assistant positions in legal offices or departments. For this program, students should be able to demonstrate a touch keyboarding rate of at least 45 words a minute. Students limited in these skills should complete preparatory keyboarding or typing courses such as BA 130, BA 133 and/or BA 136 before enrolling in the first semester of this program.

All courses taken in this program may be applied toward an associate degree. Students who go on to complete a two-year associate degree are prepared for positions at a higher level than those with less training and can generally expect to earn higher starting salaries.

The following recommendations are presented as a guide. Courses may be taken in any order, as long as all prerequisites are met.

SUGGESTED SEQUENCE:**First Semester**

		Credits	Contact Hours
BA 101	Business and Technical English 1	3	3
BA 140	Notetaking	4	4
BA 145	Computer Applications in Business 1	4	4
BA 207	Business Law 1	3	3
BA 236	Machine Transcription	2	2
		<u>16</u>	

Second Semester

BA247	Advanced Computer Applications in Business	4	4
BA 230	Business Word Processing 3	4	4
BA 242	Legal Office Applications 2	3	3
BA 248	Contemporary Office Procedures	3	3
BA 208	Business Law 2	3	3
		<u>17</u>	
Total Credits		33	

LEGAL STUDIES:**Transfer Opportunities:**

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the

continued—

order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Davenport University (updated 12/02)

The Bachelor of Science Degree offers a major in Paralegal Studies.

FIRST YEAR

First Semester	Second Semester
EN 101 .....3	EN 102 .....3
MA 107 .....4	SC 135 .....3
CO 110 .....3	PY 201 .....3
PS 110 .....3	BA 254 .....3
Humanities .....3	Elective .....3
	WE .....1
16	16

SECOND YEAR

First Semester	Second Semester
SC 131 .....3	MA 110 .....4
CO 151 .....1	CO 153 .....1
BA 256 .....4	EC 252 .....3
EC 251 .....3	BA 284 .....3
Electives .....6	Electives .....6
	WE .....1
17	18

MEDICAL OFFICE ASSISTANT: (Code 138)

Suggested GRCC Program: Certificate

This one-year certificate program is designed for students who want basic preparation for office assistant positions in medical offices or hospitals. For this program, students should be able to demonstrate a touch keyboarding rate of at least 45 words a minute. Students limited in these skills should complete preparatory keyboarding or typing courses such as BA 130, BA 133 and/or BA 136 before enrolling in the first semester of this program.

All courses taken in this program may be applied toward an associate degree. Students who go on to complete a two-year associate degree are prepared for positions at a higher level than those with less training and can generally expect to earn higher starting salaries.

The following recommendations are presented as a guide. Courses may be taken in any order, as long as all prerequisites are met.

SUGGESTED SEQUENCE:

First Semester

	Credits	Contact Hours
BA 101 Business and Technical English 1	3	3
BA 140 Notetaking	4	4
BI 117 General Human Anatomy Physiology OR	3	3
GH 125 Introduction to the Structure and Function of the Human Body	3	3
BA 236 Machine Transcription	2	2
GH 110 Medical Terminology	2	2
	<hr style="width: 50%; margin-left: auto; margin-right: 0;"/> 15	

Second Semester

BA 156 Accounting Fundamentals	3	3
BA 230 Business Word Processing 3	4	4
BA 239 Medical Office Applications	3	3
BA 240 Medical Insurance and Coding	3	3
BA 248 Contemporary Office Procedures	3	3
	<hr style="width: 50%; margin-left: auto; margin-right: 0;"/> 16	

Summer Semester

BA 145 Computer Applications in Business 1	4	4
	<hr style="width: 50%; margin-left: auto; margin-right: 0;"/> 34	

MEDICAL OFFICE ADMINISTRATION: (Code 118)

Suggested GRCC Program: Associate in Business

This program is similar to Executive Office Administration but contains specialized courses so that graduates will be prepared to accept positions as medical office assistants, ward clerks and the like.

To be eligible to receive an Associate in Business degree—Office Administration, a student must meet the course and credit requirements. Transfer credits may be used to meet graduation requirements; however, a degree candidate must complete at least six credits in office administration courses from GRCC with a "C" or better.

The following recommendations are presented as a guide. Courses may be taken in any order, as long as all the listed requirements (including prerequisites) are met.

Note: This program is designed for career entry and/or advancement in selected fields. Students planning to transfer should see a counselor or faculty advisor concerning transfer options.

SUGGESTED SEQUENCE:

First Year

	Credits	Contact Hours
BA 136 Business Word Processing 2 **	4	4
BA 140 Notetaking	4	4
BA 145 Computer Applications in Business 1	4	4
BA 156 Accounting Fundamentals OR	3	3
BA 256 Principles of Accounting 1	(4)	4
	<hr style="width: 50%; margin-left: auto; margin-right: 0;"/> 15/16	

Second Semester

BA 101	Business and Technical English 1	3	3
BA 247	Advanced Computer Applications in Business	4	4
BA 230	Business Word Processing 3	4	4
BA 240	Medical Insurance and Coding	3	3
WE —	Wellness	1	
		<hr/>	
		15	

Second Year

Third Semester

BA 102	Business and Technical English 2	3	3
BA 236	Machine Transcription	2	2
BA 248	Contemporary Office Procedures	3	3
BA 282	Organizational Behavior OR	3	3
PY 201	General Psychology	3	3
GH 110	Medical Terminology	2	2
PS 110	Survey of American Government	3	3
		<hr/>	
		16	

Fourth Semester

BA 201	Business Communications	3	3
BA 239	Medical Office Applications	3	3
BA 245	Records Management	3	3
BI 117	General Human Anatomy Physiology OR	3	5
GH 125	Introduction to the Structure and Function of the Human Body	3	3
— —	General Electives	3-4	3
		<hr/>	
		16	

Total Credits 62/63

** For students not entering the college with advanced standing credit in BA 136 through the Kent Metropolitan Articulation Project, but who can otherwise demonstrate competency in this area, this course may be waived. **Since waiver is without credit, students must take an equivalent number of elective credits to satisfy graduation requirements.**

Cooperative Education in Business (BA 180, BA 181, BA 280) is recommended for those students without previous office administration work experience.

Students enrolling in BA 136 must have completed BA 130 and BA 133 or one year of high school keyboarding or typing.

HEALTH MANAGEMENT:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to

be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Ferris State University (FSU) (updated 12/02)**

This curriculum is designed to provide an educational background and skills to recognize, evaluate and/or manage those conditions which affect our environment. This Baccalaureate Degree has 4 options: Industrial Hygiene, Hazardous Waste Management, Industrial Safety, and General Environmental Health.

The job opportunities are excellent (20 jobs per graduate 1994). Specialty areas within each option provide real-world opportunities. If you enjoy working with people and their problems, outdoors or indoors; and like to investigate, evaluate, anticipate, enforce or research anything dealing with our environment (city or rural), explore this curriculum.

Grand Rapids Campus

www.ferris.edu/grandrapids

Big Rapids Campus

See printable Transfer Guide at:

www.ferris.edu/admissions/transfer/webpages/

For more information, contact:

Educational Counselor, Mary Steeno

Toll-free Phone: 1-800-462-8553

Phone: (231) 591-2270

e-mail: steenom@ferris.edu

MEDICAL RECORDS TECHNOLOGY:

Transfer Opportunities:

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

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■ Ferris State University (FSU) (12/02)

Associate in Applied Sciences: This program is operated in conjunction with Ferris State University. FSU awards the degree. It is accredited by the Commission on Accreditation of Allied Health Education Programs in conjunction with the American Health Information Management Association.

Growth in the United States health care industry has led to a rapid expansion in the need for accurate and readily available medical information. Medical records technicians possess the technical knowledge and skills necessary to maintain components of medical/health information systems consistent with the medical, administrative, technical, legal, accrediting, and regulatory requirements of the health care delivery system.

In all types of facilities, and in various locations within the facility, the health information technician compiles administrative and health care statistics and prepares reports for reimbursement, facility planning, marketing, quality assessment and research, maintains and uses a variety of health records according to standards.

Medical records technicians can expect to find employment in all areas of health care field including hospitals, clinics, health maintenance organizations, insurance companies, government agencies, and veterinary clinics.

Job placement for graduates has been excellent and forecasts indicate that the profession should continue to be a strong employment growth area throughout the next decade.

Graduates are eligible to apply for the accreditation exam administered by the American Health Information Management Association to become Registered Health Information Administrators (RHIA).

Big Rapids Campus

See *printable Transfer Guide* at:

www.ferris.edu/admissions/transfer/webpages/

For more information, contact:

Educational Counselor, Mary Steeno
Toll-free Phone: 1-800-462-8553
Phone: (231) 591-2270
e-mail: steenom@ferris.edu

Note: The Associate degree in Medical Records Technology can be completed at FSU-Grand Rapids. General education classes can be completed at Grand Rapids Community College and the Medical Records classes (MRIS) can be completed with FSU-Grand Rapids. For more information or an advising appointment with the FSU Academic Advisor, call (616) 451-4777 or visit the Ferris office in Room 182 at the Applied Technology Center.



Engineering, Manufacturing
and Industrial Technology

Engineering, Manufacturing, and Industrial Technology

Do you enjoy knowing how things work? Do you ever think of new or better ways of doing things? Are you mechanically inclined and practical?

This program of study relates to technologies necessary to design, develop, install, or maintain physical systems. Working with tools, equipment, and other kinds of machinery is important to people who select careers related to this pathway. Sample careers include mechanics, airplane pilots, and engineers. You may like to solve complex problems and express the following personality qualities:

- ◆ Analytical
- ◆ Critical thinking
- ◆ Knowledge
- ◆ Physical stamina
- ◆ Motor coordination
- ◆ Research occupation
- ◆ Rational/logical
- ◆ Achievement
- ◆ Wisdom
- ◆ Good health
- ◆ Aptitude for math

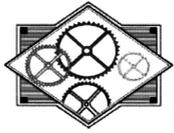
Careers related to technologies needed to design, develop, install or maintain physical systems are:

- ◆ Air Conditioning Technician
- ◆ Plumber
- ◆ Machinist
- ◆ Tool and Die Maker
- ◆ Geographer
- ◆ Electronics/Electrical
- ◆ Refrigeration Technician
- ◆ Mathematician
- ◆ Small Engine Repairer
- ◆ Auto Technician
- ◆ Surveyor

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APPLIED TECHNOLOGY



**Engineering, Manufacturing,
and Industrial Technology**

GRCC Educational Choices:

Certificate

Associate in Arts (MACRAO Agreement)

Contact: *Applied Technology Department*
(616) 234-3670

AIR CONDITIONING, REFRIGERATION, AND HEATING TECHNOLOGY: (Code 924)

Suggested GRCC Program: Certificate

Students in this one-year program learn the theory and become proficient in the skills necessary to assume jobs as air conditioning, refrigeration and heating mechanics. They take at least two hands-on laboratory courses in their specialty every semester.

All credits earned in this certificate program may be applied toward the Associate in Applied Arts and Sciences in Air Conditioning, Refrigeration and Heating Technology. The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Semester		Credits	Contact Hours
EL 144	Basic Electricity	3	6
ER 110	Basic Refrigeration	2	4
ER 111	Refrigeration Applications	2	4
ER 121	Metallic and Nonmetallic Joining Techniques	2	4
ER 221	Duct Construction and Design	3	6
ER 275	Commercial Refrigeration	3	4
MN 116	Welding	2	4
		<hr/>	
		17	
Second Semester			
ER 128	Heating and Cooling Controls	3	6
ER 135	Heating, Theory/Applications	2	4
ER 136	Air Conditioning Theory	2	4
ER 174	Mechanical Blueprint Reading and Sketching	3	4
ER 230	HVACR Electronic Controls	3	4
ER 246	Mechanical Codes	2	2
ER 276	Advanced Air Conditioning, Refrigeration and Heating	3	4
		<hr/>	
		18	
Total Credits		<hr/>	
		35	

Students intending to transfer to Ferris State University should also take PH 126 General Physics 2 and MA 110 College Algebra.

AIR CONDITIONING, REFRIGERATION, AND HEATING TECHNOLOGY: (Code 912)

Suggested GRCC Program:

Associate in Applied Arts and Sciences

Note: This program is articulated with the bachelor's degree program in HVACR Engineering Technology at Ferris State University in Big Rapids.

Heating and air-conditioning equipment make buildings comfortable for work, study or play. Refrigeration equipment makes it possible to safely store foods, medicines, and other items. The equipment that provides these conveniences is complex; air conditioning, refrigeration and heating technicians are skilled workers who install, maintain, troubleshoot and repair it. Much of the equipment with which they work today is computer controlled.

Technicians in this field are often employed to design, manufacture, install, sell and service equipment to regulate interior temperatures. They often specialize in one area, and may work both outdoors and indoors.

Students in GRCC's program learn the theory and become proficient in the skills necessary to assume jobs as air conditioning, refrigeration and heating mechanics and technicians. They take at least two laboratory courses in their specialty every semester.

Students who complete the first two semesters of this program with at least a 2.0 grade point average are eligible for the Certificate in Air Conditioning, Refrigeration and Heating (Curriculum Code 924).

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Year

First Semester		Credits	Contact Hours
EL 144	Basic Electricity and Electronics	3	6
ER 110	Basic Refrigeration	2	4
ER 111	Refrigeration Applications	2	4
ER 121	Metallic and Nonmetallic Joining Techniques	2	4
ER 221	Duct Construction and Design	3	6
ER 275	Commercial Refrigeration	3	4
MN 116	Welding	2	4
		<hr/>	
		17	

continued—

**AIR CONDITIONING, REFRIGERATION,
AND HEATING TECHNOLOGY - cont.****Second Semester**

ER 128	Heating and Cooling Controls	3	6
ER 135	Heating Theory/Applications	2	4
ER 136	Air Conditioning Theory	2	4
ER 174	Mechanical Blueprint Reading and Sketching	3	4
ER 230	HVACR Electronic Controls	3	4
ER 246	Mechanical Codes	2	2
ER 276	Advanced Air Conditioning, Refrigeration and Heating	3	4

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Second Year**Third Semester**

BA 101	Business and Technical English* OR		
EN 100	College Writing* OR		
EN 101	English Composition 1*	3	3
CO 101	Introduction to Computer Applications*	2	2
EL 163	Electrical Troubleshooting	2	2
TE 103	Technical Mathematics OR		
MA 107	Intermediate Algebra	4	4
— —	Lab Science (TE 114, PH 115, or PH 125)	4	6

 15
Fourth Semester

BA 102	Business and Technical English* OR		
EN 102	English Composition 2*	3	3
ER 250	Basic Boiler Operation	3	4
WE —	Wellness	1	2
PS 110	Survey of American Government	3	3
SC 135	Interpersonal Communication OR		
— —	Humanities Elective	3	3

 13
Total Credits**63**

* Students intending to transfer to HVACR Engineering Technology at Ferris State University should take CO 103 in addition to CO 101. Also, they should take EN 101 and EN 102 rather than BA 101 and BA 102.

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descrip-

tions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Ferris State University**AUTOMOTIVE SERVICING: (Code 921)****Suggested GRCC Program: Certificate**

In less than ten months, this program gives students the training necessary to fill jobs as beginning automotive mechanics.

The program is arranged in four 7.5-week periods and one 3-week interim session. Courses are structured so that students may enter the program at the beginning of any 7.5-week period. With a few exceptions, courses may be taken in any order, so that students may plan their program around their job schedule.

Instructors plan their teaching to supply the background and theory that technicians need in order to maintain and repair complex modern automobiles. However, about 60 percent of the class time in this program is devoted to learning in laboratories and shops so that students “learn by doing.”

The capstone course in the program, Applied Auto Servicing, helps students bridge the gap between school and full-time work as an auto mechanic. Students spend the three-week Interim Session in eight-hour days learning in a supervised, on-the-job training environment.

Students are not required to purchase hand tools to participate in this program; however, it will be necessary to purchase hand tools to be successfully employed as an automotive technician. Some advanced standing credit may be granted to entering graduates of high school vocational programs that are members of the Kent Metropolitan Articulation Project.

All credits earned in this certificate program may be applied toward the Associate in Applied Arts and Sciences degree in Automotive Technology.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Semester– First 7.5 weeks

		Credits	Contact Hours
MN 116	Welding	2	4
TR 102	Basic Vehicle Performance	2	3
TR 110	Auto Electrical Systems	2	4
TR 147	Automotive Brake Systems	2	4
		<hr/> 8	

First Semester– Second 7.5 weeks

MN 116	Welding (<i>continued</i>)		
TR 103	Auto Engine Design and Service	4	6
TR 148	Steering, Suspension, and Alignment	2	4
TR 210	Auto Ignition Systems	2	4
		<hr/> 8	

Second Semester– First 7.5 weeks

TE 103	Technical Mathematics	4	4
TR 140	Auto Power Trains	2	4
TR 220	Auto Electronic Control Systems	2	4
TR 230	Auto Fuel Injection	2	4
		<hr/>	
		10	

Second Semester– Second 7.5 weeks

TE 103	Technical Mathematics (<i>continued</i>)		
TR 143	Automotive Air Conditioning and Heating	2	4
TR 160	Automotive Driveability	2	4
TR 240	Automatic Transmissions	2	4
		<hr/>	
		6	

Interim Session (3 Weeks)

TR 180	Applied Auto Servicing	4	8
		<hr/>	
		4	

Total Credits **36**

AUTOMOTIVE TECHNOLOGY: (Code 922)

Suggested

GRCC Program: Associate in Applied Arts and Sciences

Note: This program is articulated with the bachelor's degree program in Automotive and Heavy Equipment Management at Ferris State University.**

The Automotive Technology associate degree program prepares students for the fast-paced, highly technical field of automotive care and repair. Electronic fuel injection, turbocharging, rack and pinion steering, transaxles and McPherson strut suspensions are a few of the modern technologies that students study in the program.

The first year of the program is arranged in four 7.5-week periods and one 3-week interim session. Courses are structured so that students may enter the program at the beginning of any 7.5-week period. With a few exceptions, courses may be taken in any order, so that students may plan their program around their job schedule.

Instructors plan their teaching to supply the background and theory that technicians need in order to maintain and repair complex modern automobiles. However, about 60 percent of the time spent in automotive classes is devoted to learning in laboratories and shops so that students actually “learn by doing.”

The capstone courses in the program, Applied Auto Servicing and Advanced Auto Servicing, help students bridge the gap between school and full-time work in the automotive field. Students spend the three-week Interim Session in eight-hour days learning in a supervised, on-the-job training environment.

GRCC graduates are successfully employed in a variety of technical automotive jobs in an industry that employs one of every six workers in the United States.

Students are not required to purchase hand tools to participate in this program; however, it will be necessary to purchase hand tools to be successfully employed as an automotive technician. Some

advanced standing credit may be granted to entering graduates of high school vocational programs that are members of the Kent Metropolitan Articulation Project.

Students who complete the first 36 credits listed below are eligible for the Certificate in Automotive Servicing (see Curriculum Code 921).

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Year

First Semester– First 7.5 weeks

		Credits	Contact Hours
MN 116	Welding	2	4
TR 102	Basic Vehicle Performance	2	3
TR 110	Auto Electrical Systems	2	4
TR 147	Automotive Brake Systems	2	4
		<hr/>	
		8	

First Semester– Second 7.5 weeks

MN 116	Welding (<i>continued</i>)		
TR 103	Auto Engine and Design Service	4	6
TR 148	Steering, Suspension, and Alignment	2	4
TR 210	Auto Ignition Systems	2	4
		<hr/>	
		8	

Second Semester– First 7.5 weeks

TE 103	Technical Mathematics		
TR 140	Auto Power Trains	2	4
TR 220	Auto Electronic Control Systems	2	4
TR 230	Auto Fuel Injection	2	4
		<hr/>	
		10	

Second Semester– Second 7.5 weeks

TE 103	Technical Mathematics (<i>continued</i>)		
TR 143	Automotive Air Conditioning and Heating	2	4
TR 160	Automotive Driveability	2	4
TR 240	Automatic Transmissions	2	4
		<hr/>	
		6	

Interim Session (3 Weeks)

TR 180	Applied Auto Servicing	4	8
		<hr/>	
		4	

Second Year

Third Semester

BA 101	Business and Technical English 1**	OR 3	3/4
EN 100	College Writing**	OR	
EN 101	English Composition 1 **		
EL 144	Basic Electricity and Electronics	3	6
PS 110	Survey of American Government	3	3
TE 114	Material Science**	4	5
		<hr/>	
		13	

continued—

AUTOMOTIVE TECHNOLOGY - cont.**Fourth Semester**

BA 102	Business and Technical English 2 OR	3	3
EN 102	English Composition 2 **		
TR 260	Advanced Power Trains	4	6
WE —	Wellness	1	2
— —	Humanities Elective	3	
		<hr/>	
		11	

Interim Session (3 Weeks)

TR 280	Advanced Auto Servicing	4	8
		<hr/>	
		4	

Total Credits	64
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** Students intending to transfer to Automotive and Heavy Equipment Management at FSU should take PH 115 instead of TE 114. Also, they should also take EN 101 and EN 102 instead of the corresponding BA courses.

AUTOMOTIVE TECHNICIAN:**GRCC Job Training Choices: (non-credit)****18 Weeks****Overview:**

The Automotive Mechanic Technician is required to be certified and licensed in the state of Michigan. As an Automotive Mechanic Technician, your job will be to diagnose and repair customer vehicles. Licensed technicians will use precision diagnostic equipment, service manuals, computer data and hands-on power tools to provide high tech, timely and quality service. To be most effective in the automechanic industry today, you will need to be able to read service manual schematics, perform basic shop math, read measurement tools, and communicate effectively with others using automotive terminology.

Course Recommendations:

The applicant should demonstrate reading and math skills and have a valid driver's license. The ability to work with others, good hand/eye coordination, good color acuity, and manual dexterity are also desired.

Cost:

\$3,600

Course Outline:

- Introduction/Shop Safety/Tools
- Front End and Steering Systems
- Brake Systems, ABS
- Automotive Electricity
- Ignition and Fuel Systems; On-Board Computers
- Heating and Air Conditioning; Recovery and Recycling
- Engine Driveability
- Math and Measuring
- Computer Operation
- Teamwork and Communication Skills

Contact: Occupational Training**Information: (616) 234-3800****www.grcc.edu****E-mail: training@grcc.edu****COMPUTER ELECTRONICS: (Code 938)****Suggested****GRCC Program: Associate in Applied Arts and Sciences**

Note: This program is articulated with the bachelor's degree program in Electrical/Electronics Engineering Technology at Ferris State University in Big Rapids.

The Computer Electronics program prepares students to enter careers in the manufacture, installation and maintenance of computers, controllers and other electronic devices.

The computer electronics technician works in manufacturing industries to assemble and test electronic systems that have computerized controls. The technician also installs and troubleshoots computer systems. Computer electronics technicians use a variety of electronic equipment, offer technical assistance in design, test and analyze operating systems and write technical reports.

Jobs available in this fast-growing field include computer technician, field engineering technician, service technician, computer sales representative and electronic technician.

Computer Electronics Technology students at GRCC study mathematics, the theory of electricity and electronics, analog circuits, digital circuits, equipment theory and applications, computer circuits, computer systems with programming analysis and repair, and industrial control systems. A "capstone" course in computer repair provides students with the experience of repairing computers in actual use, under the guidance of an instructor. Most of the course work comprises half lecture and half laboratory work.

Students who complete the first two semesters (excepting Physical Education courses) of this program with at least a 2.0 grade point average are eligible for the Certificate in Electronics Servicing (Curriculum Code 926).

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Year

First Semester

		Credits	Contact Hours
EL 106	Technical Electricity (8 weeks)	4	8
EL 107	Technical Electronics (8 weeks)	4	8
EL 132	Electronics Mathematics * #	5	5
EL 160	Electronic Fabrication	2	3
		15	

Second Semester

EL 108	Electronic Servicing (7 weeks)	2	4
EL 161	Introduction to Digital Logic (8 weeks)	2	4
EL 202	Communication Electronics (9 weeks)	3	6
EL 262	Basic Digital Logic Circuits (8 weeks)	2	4
EL 264	Linear Integrated Circuits	2	4
WE —	Wellness	1	2
PH 115	Technical Physics #	4	6
		16	

Second Year

Third Semester

BA 101	Business and Technical English 1# OR	3	3/4
EN 100	College Writing# OR		
EN 101	English Composition 1 #		
EL 203	Applied Measurements (8 weeks)	3	6
EL 205	Transistor Electronics (8 weeks)	3	6
EL 261	Microcomputer Programming (8 weeks)	2	4
EL 263	Digital Electronic Systems (8 weeks)	2	4
SC 135	Interpersonal Communication	3	3
		16	

Fourth Semester

BA 102	Business and Technical English 2 # OR	3	3
EN 102	English Composition 2 #		
EL 201	Industrial Electricity (8 weeks)	3	6
EL 204	Industrial Electronics (8 weeks)	3	6
EL 265	Computer Systems (8 weeks)	2	4
EL 266	Computer Servicing (8 weeks)	2	4
PS 110	Survey of American Government	3	3
		16	

Total Credits 63

Students intending to transfer to Electrical/Electronics Engineering Technology at FSU should take MA 110 or MA 131. Students should take PH 125 instead of PH 115. Also, they should take EN 101 and EN 102 instead of BA 101 and BA 102.

* MA 110, or the combination of MA 107 and MA 108, may be substituted for EL 132.

ELECTRONICS SERVICING: (Code 926)

Suggested GRCC Program: Certificate

This one-year program prepares students for positions as radio and television repair persons. Such workers will install, adjust, troubleshoot and repair TV sets, radios and similar electronic equipment. All credits earned in this certificate program may be applied toward the Associate in Applied Arts and Sciences in Electronics Technology.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Semester

		Credits	Contact Hours
EL 106	Technical Electricity (8 weeks)	4	8
EL 107	Technical Electronics (8 weeks)	4	8
EL 132	Electronics Mathematics *	5	5
EL 160	Electronic Fabrication	2	3
		15	

Second Semester

EL 108	Electronic Servicing (7 weeks)	2	4
EL 161	Introduction to Digital Logic (8 weeks)	2	4
EL 202	Communication Electronics (9 weeks)	3	6
EL 262	Basic Digital Logic Circuits (8 weeks)	2	4
EL 264	Linear Integrated Circuits	2	4
PH 115	Technical Physics	4	6
		15	

Total Credits 30

* MA 110, or the combination of MA 107 and MA 108, may be substituted for EL 132.

ELECTRONICS TECHNOLOGY: (Code 906)

Suggested

GRCC Program: Associate in Applied Arts and Sciences

Note: This program is articulated with the bachelor's degree program in Electrical/Electronics Engineering Technology at Ferris State University.#

The Electronics Technology program prepares students to enter the growing and complex field of electronics technology as service and repair persons and as electronics technicians. Service and repair persons install, adjust, troubleshoot and repair all kinds of electronic equipment. Electronics technicians work in manufacturing, broadcasting and in public installations. They operate all kinds of electronic equipment and provide technical assistance in circuit design and construction. They also use electronic measuring devices to analyze circuits and perform other duties.

Jobs available in this field include communications technicians, laboratory technicians, production testers, electronic drafters, installers, instrument technicians, and others.

Electronics Technology students at GRCC study mathematics, the theory of electricity and electronics, analog circuits, digital circuits, equipment theory and applications, radio and television repair, and industrial controls. Much of their learning occurs in hands-on laboratory courses.

Students who complete the first two semesters of this program with at least a GPA of at least 2.0 are eligible for the Certificate in Electronics Servicing (Curriculum Code 926).

continued—

ELECTRONICS TECHNOLOGY - cont.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Year**First Semester**

		Credits	Contact Hours
EL 106	Technical Electricity (8 weeks)	4	8
EL 107	Technical Electronics (8 weeks)	4	8
EL 132	Electronics Mathematics ** #	5	5
EL 160	Electronic Fabrication	2	3
		<hr/>	
		15	

Second Semester

		Credits	Contact Hours
EL 108	Electronic Servicing (7 weeks)	2	4
EL 161	Introduction to Digital Logic (8 weeks)	2	4
EL 202	Communication Electronics (9 weeks)	3	6
EL 262	Basic Digital Logic Circuits (8 weeks)	2	4
EL 264	Linear Integrated Circuits	2	4
PH 115	Technical Physics #	4	6
		<hr/>	
		15	

Second Year**Third Semester**

BA 101	Business and Technical English 1# OR	3	3
EN 100	College Writing# OR	3	4
EN 101	English Composition 1 #	3	3
EL 203	Applied Measurements (8 weeks)	3	6
EL 205	Transistor Electronics (8 weeks)	3	6
— —	Technical Elective *** #	4	6
— —	Humanities Elective	3	
		<hr/>	
		16	

Fourth Semester

BA 102	Business and Technical English 2# OR	3	3
EN 102	English Composition 2 #	3	3
EL 201	Industrial Electricity (8 weeks)	3	6
EL 204	Industrial Electronics (8 weeks)	3	6
WE —	Wellness	1	2
PS 110	Survey of American Government	3	3
— —	Technical Elective *** #	4	6
		<hr/>	
		17	

Total Credits **63**

** MA 110, or the combination of MA 107 and MA 108, may be substituted for EL 132.

***Technical electives should be chosen from:

- EL 162 Control Systems
- EL 163 Electrical Troubleshooting
- EL 164 Programmable Logic Controllers
- EL 225 Color TV Servicing
- EL 226 Advanced Servicing Techniques
- EL 261 Microprocessor Programming
- EL 263 Digital Computer Systems
- TE 282 Cooperative Education in Technology 1
- TE 283 Cooperative Education in Technology 2

Students intending to transfer to Electrical/Electronics Engineering Technology at FSU should take MA 110 or MA 131. They must take EL 261 and EL 263 as their "Technical Electives" in the third and fourth semesters. It is recommended to take PH 125 instead of PH 115 and EN 101 and EN 102 instead of BA 101 and BA 102.

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Ferris State University**INDUSTRIAL MAINTENANCE: (Code 918)****Suggested GRCC Program: Certificate**

The industrial maintenance certificate program is designed to give a student the basic skills required of a maintenance mechanic. All classes in the program are articulated into the industrial maintenance Associate degree program. Classes in this program are available in Grand Rapids and in Holland. For information regarding this certificate program, please call Randy Lee, Department Head, Applied Technology at (616) 234-3649.

INDUSTRIAL MAINTENANCE TECHNOLOGY: (Code 985)**Suggested****GRCC Program: Associate in Applied Arts and Sciences**

The Industrial Maintenance Technology program prepares students to install, adjust, troubleshoot, and repair a variety of industrial machinery used in manufacturing settings. Technicians may work in factories that manufacture, finish, or assemble many different types of products.

Students study the basic operations common to production equipment used in industry today. Electricity and electronics are emphasized because most modern manufacturing equipment is electrically powered. Pneumatics, hydraulics, and mechanical power are also covered.

This highly skilled trade offers many employment opportunities. In the Grand Rapids area, thousands of companies require maintenance personnel. Since each production facility has different needs, the program allows students to select technical electives specific to a particular production area.

First Year

First Semester

		Credits	Contact Hours
EL 132	Electronics Mathematics OR TE 103 and TE 104 Technical Mathematics	5	5
EL 144	Basic Electricity and Electronics OR Combination EL 106 and EL 107	3	6
— —	Technical Elective	2	2-4
MN 119	Introductory Machine Operations	4	8
MN 116	Welding	2	4
		16	

Second Semester

EL 161	Introduction to Digital Logic	2	4
EL 162	Control Systems	2	3
EL 262	Basic Digital Logic Circuits	2	4
MN 218	Pneumatics	3	4
— —	Technical Elective	3	3-6
SC 135	Interpersonal Communication	3	3
		15	

Second Year

Third Semester

BA 101	Business and Technical English 1 OR	3	3
EN 100	College Writing OR	3	4
EN 101	English Composition 1	3	3
EL 163	Electrical Troubleshooting	2	2
EL 164	Programmable Logic Controllers	2	4
MN 217	Hydraulics	3	6
PS 110	Survey of American Government	3	3
— —	Technical Elective	3	6
		16	

Fourth Semester

AP 113	Mechanical Power Transmission	2	2
BA 102	Business and Technical English 2 OR	3	3
EN 102	English Composition 2	3	3
EL 201	Industrial Electricity	3	6
EL 204	Industrial Electronics	3	6
WE —	Wellness	1	1
— —	Technical Elective	3	3-6
		15	

Total Minimum Credits 62

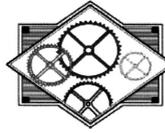
Technical Electives

Any AP, AR, DR, EL, EG, ER, MN, TE, TI, or TR courses

Suggested Elective Courses

MN 246, EG 110, EL 166, ER 135, ER 136

DRAFTING



**Engineering, Manufacturing,
and Industrial Technology**

GRCC Educational Choices:

Certificate

Associate in Applied Arts and Sciences

**Contact: Drafting and Design Department
(616) 234-3670**

ARCHITECTURAL DRAFTING TECHNOLOGY: (Code 925)

Suggested GRCC Program:

Associate in Applied Arts and Sciences

Note: This program is articulated with the bachelor's degree program in Construction Management at Ferris State University in Big Rapids.**

Many fascinating and rewarding careers are open to people interested in architectural drafting and construction. The architectural technician is competent in sketching and in drawing schematic diagrams and pictorial representations. The technician must prepare architectural designs through the use of floor plans, elevations, sections, and perspective drawings. He/she also works with building specifications. Those seeking careers in this area should be interested in GRCC's Architectural Drafting Technology program.

In order to give its students the most up-to-date training available and to maximize their employment opportunities, the College has incorporated into the Architectural Drafting Technology program state-of-the-art information and techniques in computer-aided design (CAD). These techniques allow technicians to utilize of powerful computers to make their work faster, easier and more accurate.

Some advanced standing credit may be granted to entering graduates of high school drafting programs that are members of the Kent Metropolitan Articulation Project.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

continued—

ARCHITECTURAL DRAFTING TECHNOLOGY - cont.**First Semester**

		Credits	Contact Hours
AR 105	Construction Materials 1 (CSI Div. 1-5)	3	4
AR 111	Orientation to Architecture	2	2
AR 119	Introduction to Architectural CAD	3	4
AR 125	Print Reading and Specifications	3	3
AR 201	Architectural Graphics 1	3	6
WE —	Wellness	1	2
		15	

Second Semester

AR 103	Building Codes and Standards	2	2
AR 106	Construction Materials 2 (CSI Div. 6-10, 15, 16)	3	4
AR 120	Architectural Working Drawings 1 (using CAD)	4	6
AR 202	Architectural Graphics 2	3	6
BA 101	Business and Technical English* OR	3	3
EN 100	College Writing* OR	3	4
EN 101	English Composition 1*	3	3
WE —	Wellness	1	2
		16	

Second Year**Third Semester**

AR 121	Architectural Working Drawings 2* (using CAD)	4	6
AT 270	History of Architecture	3	3
BA 102	Business and Technical English 2* OR	3	3
EN 102	English Composition 2*	3	3
MA 107	Intermediate Algebra* OR	4	4
TE 103	Mathematics*	4	4
		14	

Fourth Semester

AR 104	Residential Design OR		
AR 208	Design Studio - Commercial Building Design	4	6
AR 112	Mechanical and Electrical Drafting (using CAD)	3	4
PH 115	Technical Physics	4	6
PS 110	Survey of American Government	3	3
SC 131	Fundamentals of Public Speaking	3	3
		17	

Total Credits **62**

(For an Associate in Arts degree, 5 additional Social Science credits are needed, for a total of 67.)

* Students intending to transfer to four year colleges should take EN courses instead of BA courses. Also, they should take an MA course instead of a TE course.

** Students intending to transfer to Automotive and Heavy Equipment Management at FSU should take PH 115 instead of TE 114. Also, they should also take EN 101 and EN 102 instead of the corresponding BA courses.

CONSTRUCTION MANAGEMENT:**Transfer Opportunities:**

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Ferris State University (updated 12/02)

This program is designed to prepare students to manage and supervise the total construction process, from initial considerations through the bidding to final completion as a project supervisor for a contractor, as a project manager for a design firm or as a consultant in the field of construction management. This program is articulated with Architectural Drafting Technology (Code 925).

This program is available at both the Big Rapids and Grand Rapids campuses.

Grand Rapids Campus
www.ferris.edu/grandrapids

For more information about the program with Ferris in Grand Rapids, contact the academic advisor in Room 182, ATC building, at (616) 451-4777. Additional information is available at www.ferris.edu/grandrapids.

CONSTRUCTION TRADES:**GRCC Job Training Choices: (non-credit)**
18 Weeks**Overview:**

The Construction Trades program focuses on the fundamental skills needed for entry into the construction industry. Many technical skills are required for an individual to be successful in the construction industry. To be most effective in today's construction industry you should know how to perform blueprint reading, shop math, communication, and teamwork.

Course Recommendations:

The applicant should demonstrate reading and math skills. The ability to work with others, good hand/eye coordination, and manual dexterity are also desired.

Cost:

\$3,600

Course Outline:

- Basic Safety
- Construction Math
- Hand Tools
- Power Tools
- Blueprints
- Floor Systems
- Wall and Ceiling Framing
- Roof Framing
- Roofing Applications
- Stairs
- Plastic Pipe and Fittings
- Copper Pipe and Fittings
- Basic Electricity
- Electrical Safety
- Wiring: Residential
- Drywall
- Cabinet and Countertop Making

Contact *Occupational Training*
Information: (616) 234-3800
www.grcc.edu
E-mail: training@grcc.edu

MECHANICAL DRAFTING/CAD: (Code 928)

Suggested GRCC Program: Certificate

This program provides students with one year of training so they can assume positions as beginning detail drafters in business and industry. An introduction to computer aided design (CAD) is a feature of this program.

All credits earned in this certificate program may be applied toward the Associate in Applied Arts and Sciences in Mechanical Drafting/CAD Technology.

Some advanced standing credit may be granted to entering graduates of high school drafting or machine tool programs that are members of the Kent Metropolitan Articulation Project.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Semester

		Credits	Contact Hours
EG 110	Industrial Graphics with CAD (Note: A combination of both EG 120 and DR 228 may be substituted for EG 110)	3	6
EG 121	Descriptive Geometry	2	4
MN 119	Introductory Machine Operations OR	4	8
MN 199	Theory of Machine Shop	(3)	(4)
TE 103	Technical Mathematics OR		
MA 107	Algebra	4	4
TE 104	Advanced Technical Mathematics OR	3	3
MA 108	Trigonometry	(2)	(2)
		14/16	

Second Semester

DR 212	Tool Design	2	4
DR 224	Die Design	2	4
DR 250	Introduction to Mechanical Desktop	3	4
EG 201	Advanced Engineering Graphics/CAD	2	4
EG 230	Advanced Descriptive Geometry	2	4
TE 114	Material Science OR	4	5
PH 115	Technical Physics OR	(4)	(6)
DR 241	Mold Design and Theory	(3)	(4)
		14/15	
Total Minimum Credits		28/31	

MECHANICAL DRAFTING/CAD TECHNOLOGY: (Code 904)

Suggested**GRCC Program: Associate in Applied Arts and Sciences**

Note: This program is articulated with the bachelor's degree program in Manufacturing Engineering Technology at Ferris State University in Big Rapids and Grand Rapids.**

Whether building a space shuttle, television set, or automobile part, workers follow drawings that show the exact dimensions and specifications of the entire object and each of its parts. The people who draw these plans are drafters.

Drafters prepare detailed drawings based on rough sketches, specifications and calculations made by scientists, engineers and designers. Drafters also calculate the strength, quality, quantity and cost of materials. Final drawings contain a detailed view of the object from all sides as well as specifications for materials to be used, procedures followed and other information needed to make the part or build the vehicle. Those seeking careers in this area should be interested in GRCC's Mechanical Drafting/CAD Technology program.

The College has incorporated into the Mechanical Drafting/CAD Technology program the latest information and techniques in computer-aided design (CAD) in order to give students the most up-to-date training available and to maximize their employment opportunities.

Graduates of GRCC's Mechanical Drafting/CAD Technology program are secure in such careers as mechanical drafting; CAD

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MECHANICAL DRAFTING/CAD TECHNOLOGY - cont.

operation; tool, die, mold, machine and product design; and high school and college teaching.

GRCC also offers a one-year certificate program in Mechanical Drafting/CAD for students who wish to enter the job market in the shortest possible time.

Some advanced standing credit may be granted to entering graduates of high school drafting or machine tool programs that are members of the Kent Metropolitan Articulation Project.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Year**First Semester**

		Credits	Contact Hours
EG 110	Industrial Graphics with CAD (Note: A combination of both EG 120 and DR 228 may be substituted for EG 110)	3	6
EG 121	Descriptive Geometry	2	4
MN 119	Introductory Machine Operations OR	4	8
MN 199	Theory of Machine Shop	(3)	(4)
PS 110	Survey of American Government	3	3
TE 103	Technical Mathematics and		
TE 104	Advanced Technical Mathematics OR	3	3
MA 107	Intermediate Algebra** and	4	4
MA 108	Trigonometry** OR	(2)	(2)
MA 110	College Algebra	4	4
		<u>17/19</u>	

Second Semester

DR 212	Tool Design	2	4
DR 224	Die Design	2	4
DR 250	Mechanical Design	3	4
EG 201	Advanced Engineering Graphics/CAD	2	4
EG 230	Advanced Descriptive Geometry	2	4
TE 114	Material Science OR	4	5
PH 115	Technical Physics	(4)	(6)
		<u>15</u>	

Second Year**Third Semester**

BA 101	Business and Technical English 1** OR		
EN 100	College Writing** OR		
EN 101	English Composition 1**	3	3
DR 229	Detail Drafting	3	4
DR 258	Introduction to Pro-Engineering	4	4
MN 220	Basic Plastics Processing	3	6
— —	Drafting/CAD Specialization Electives (see following list)	2(4)	2(4)
WE —	Wellness	1	2
		<u>16/18</u>	

Fourth Semester

BA 102	Business and Technical English 2** OR		
EN 102	English Composition 2**	3	3
DR 238	Intermediate CAD	3	3
DR 241	Mold Design and Theory	3	4
— —	Humanities Elective	3	3
— —	Drafting/CAD Elective	3	
		<u>15</u>	
Total Minimum Credits		63/67	

Drafting/CAD Specialization Electives

		Credits	Contact Hours
DR 110	Introduction to Contour Drafting	3	4
DR 160	Electronics Drafting (CAD)	2	4
DR 225	Advanced Die Design	2	4
DR 226	Machine Design Theory and Blueprint Reading	3	4
DR 259	Advanced Part Design and Sheet Metal Design	4	4
TE 282	Cooperative Education in Technology	3	3

** Students intending to transfer to four-year colleges should take EN courses instead of BA courses. Also, they should take an MA course instead of a TE course.

Transfer Opportunities:

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Ferris State University-Grand Rapids (updated 12/02)

This program is designed to prepare students to become either a product developer, computer-aided designer, mechanical designer, or design engineering technologist. This program is articulated with Tooling and Manufacturing Technology (code 908) and Mechanical Drafting/CAD Technology (code 904). Note programs for specific requirements. This program is available at both the Big Rapids and Grand Rapids campuses.

For information about the program with Ferris in Grand Rapids, contact the academic advisor in Room 182, ATC building, at (616) 451-4777. Additional information is available at www.ferris.edu/grandrapids.

CAD TECHNICIAN:

GRCC Job Training Choices: (non-credit)

18 Weeks

Overview:

As a CAD (Computer Aided Design) Drafter/Detailer, your job will involve using a CAD computer workstation to perform basic duties such as revising mechanical, architectural, civil or electrical drawings from pre-existing drawings and generating new drawings from engineers' sketches. Many CAD Drafters/Detailers advance in this profession and become designers, CAD department managers or degreed engineers. Effective workers in today's fast-changing CAD environment need to be able to operate CAD hardware and software, read blueprints, perform technical math, and communicate effectively with others using current CAD terminology.

Course Recommendations:

Proficiency in mathematics including algebra and geometry is required, and the ability to work with others is essential. The applicant also must be able to read, to write in a grammatically correct and coherent manner, and should have prior experience and/or training in a technical or manufacturing area.

Cost:

\$3,600

Course Outline:

- CAD Skills
- Blueprint Reading and Sketching
- Technical Mathematics
- Computer Hardware
- Computer Software including CAD Applications
- Teamwork and Communication Skills

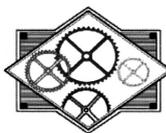
Contact *Occupational Training*

Information: (616) 234-3800

www.grcc.edu

E-mail: training@grcc.edu

MANUFACTURING.



**Engineering, Manufacturing,
and Industrial Technology**

GRCC Educational Choices:

Certificate

Associate in Applied Arts and Sciences

Contact: *Manufacturing Department
(616) 234-3670*

INDUSTRIAL TECHNOLOGY: (Code 919)

Suggested GRCC Program: Certificate

Students completing the following course requirements with a GPA of 2.0 or greater may request that they be awarded the Certificate in Industrial Technology.

23 credits chosen from the following departments:

- Apprenticeship (AP)
- Architecture (AR)
- Drafting (DR)
- Electricity and Electronics (EL)
- Energy Management (ER)
- Engineering (EG)
- Manufacturing (MN)
- Technology (TE) –to include TE 192
- Technology for Industry (TI)
- Transportation (TR)

The 23 credits may include no more than four credits of laboratory courses in:

- Chemistry (CM)
- Physical Science (PC)
- Physics (PH)

And no more than two credits in:

- Computer Applications (CO)

In addition to the above, students must also successfully complete:

BA 102, Business and Technical English 2 (three credits)*, and four credits of any MA mathematics or TE mathematics course except MA 003.

Total required number of credits is 30.

MANUFACTURING ENGINEERING TECHNOLOGY:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Ferris State University (updated 12/02)

This program prepares an individual in the development, design analysis, planning, supervision and construction of methods and equipment for the production of industrial and consumer goods. This program is articulated with Tooling and Manufacturing Technology (Code 908), Mechanical Drafting/CAD Technology (Code 904) and Welding Technology (Code 932). Note programs for specific requirements.

Manufacturing Engineering Technology is available on the main campus in Big Rapids and in Grand rapids. It requires completion of an Associate degree in the GRCC coded programs noted above. For information about the program with Ferris in Grand Rapids, contact the academic advisor in Room 182, ATC building, at (616) 451-4777. Additional information is available at www.ferris.edu/grandrapids.

PAINT FINISHING AND POWDER COATING: (Code 980)

Suggested GRCC Program: Certificate

Paint Finishing and Powder Coating Core

		Credits	Contact Hours
MN 270	Paint Finishing Systems Design and Operation	3	3
MN 271	Powder Coating	3	3
MN 272	Introduction to Liquid Coatings	3	3
MN 273	Paint Finishing and the Environment	3	3

MN 274	Paint Finishing Pretreatment	3	3
MN 275	Liquid Application Equipment	3	3
MN 276	Electrocoating	3	3
Total Core Requirement		21	

Electives **2**

General Education Requirements

BA 102	Business and Technical English 2 OR	3	3
EN 101	English Composition 1	3	3
TE 103	Technical Mathematics (TE 103 or above)	4	4
		7	

Total Minimum Credits **30**

Suggested Electives:

CO 101	Introduction to Computer Applications
MN 100	Manufacturing Principles
MN 248	Quality Assurance
MN 249	Statistical Process Control
TE 192	Applied Problem Solving and Team Building
TE 272	Industrial Safety

PLASTICS MANUFACTURING TECHNOLOGY: (Code 945)

Suggested GRCC Program: Certificate

The Plastics Technology certificate program is designed to prepare graduates for employment as operators, molding technicians, material handlers, or mold setters in the field of injection molding as well as entry level skills for employment related to the processes of extrusion, blow molding, and thermoforming. Students will take a combination of lecture and laboratory courses from instructors who have experience in the plastics industry.

All credits earned in this certificate program may be applied toward the Associate in Applied Arts and Sciences in Plastics Manufacturing Technology. Some classes are transferable into Ferris State University's four-year Bachelor of Science in Plastics Engineering Technology degree. Students interested in transferring to FSU should see their faculty advisor for specific information.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Semester		Credits	Contact Hours
BA 101	Business and Technical English 1**	3	3
EG 110	Industrial Graphics with CAD	3	6
MN 100	Manufacturing Principles **	2	2
MN 219	Survey of Polymer Technology	3	3
MN 220	Basic Plastics Processing	3	6
TE 103	Technical Mathematics **	4	4
		18	

Second Semester

MN 223	Injection Molding Theory	3	3
MN 242	Applied Injection Molding	4	6
MN 217	Hydraulics	3	4
— —	Elective *	4	
		<hr/>	
		14	
Total Credits		32	

* Students must take one of the following three electives:

DR 241	Mold Design and Theory	3	4
MN 165	Plastics Testing	4	4
MN 244	Advanced Plastics Processing	4	6

** These classes may not transfer into FSU's Bachelor of Science in Plastics Engineering Technology degree program.

PLASTICS MANUFACTURING TECHNOLOGY: (Code 935)

Suggested

GRCC Program: Associate in Applied Arts and Sciences

Note: This program is articulated with the bachelor's degree program in Manufacturing Engineering Technology at Ferris State University.**

The plastics forming industry continues to grow nationally and locally. An increasing variety of automobile parts, household goods, sports equipment, furniture, toys and machinery parts are formed from plastic.

The Plastics Manufacturing Technology program trains people for jobs as laboratory technicians, mold designers, production supervisors, mold technicians and plastics machinery maintenance technicians for the rapidly growing local plastics forming industry. There are over 150 plastics processing plants in Western Michigan that need trained people. These manufacturers and the Western Michigan Section of the Society of Plastics Engineers have indicated that excellent employment opportunities exist in plastics manufacturing and that trained workers are in short supply.

Injection molding, blow molding, extrusion, thermoforming, and many secondary processes are studied in the program. Since injection molding is the most prevalent of these processes, it is emphasized. Some advanced standing credit may be granted to entering graduates of high school machine tool and drafting programs that are members of the Kent Metropolitan Articulation Project.

The following sequence of classes is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Year

First Semester

		Credits	Contact Hours
EG 110	Industrial Graphics with CAD	3	6
MN 219	Survey of Polymer Technology	3	3
MN 220	Basic Plastics Processing	3	6
TE 103	Technical Mathematics*	4	4

BA 101	Business and Technical English 1* OR	3	3/4
EN 100	College Writing* OR		
EN 101	English Composition 1		
		<hr/>	
		16	

Second Semester

EL 144	Basic Electricity and Electronics	3	6
MN 165	Plastics Testing	4	4
MN 217	Hydraulics	3	6
MN 223	Injection Molding Theory	3	3
MN 242	Applied Injection Molding	4	6
		<hr/>	
		17	

Second Year

Third Semester

TE 104	Advanced Technical Mathematics *	3	3
DR 241	Mold Design and Theory	3	4
MN 244	Advanced Plastics Processing	4	6
MN 249	Statistical Process Control *	3	3
MN 100	Manufacturing Principles *	2	2
WE —	Wellness	1	2
		<hr/>	
		16	

Fourth Semester

BA 102	Business and Technical English 2* OR	3	3
EN 102	English Composition 2		
MN 246	Injection Molding Machine Maintenance	3	4
WE —	Wellness	1	2
PS 110	Survey of American Government	3	3
SC 131	Fundamentals of Public Speaking	3	3
		<hr/>	
		13	

Total Credits

62

* These classes may not transfer into FSU's Bachelor of Science in Plastics Engineering Technology degree program.

Transfer Opportunities:

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Ferris State University** (updated 12/02)

(Students should enroll in code 798.) Admission into the B.S. Plastics Engineering Technology curriculum allows students to complete program requirements on the main campus.

continued—

■ Ferris State University - continued

Students intending to transfer must fulfill the following course requirements when completing AAS program requirements in Plastics Manufacturing Technology.

Big Rapids Campus

See printable Transfer Guide at:

www.ferris.edu/admissions/transfer/webpages/

For more information, contact:

Educational Counselor, Vordyn Nelson

Phone: (231) 591-2890

e-mail: nelsonv@ferris.edu

QUALITY SCIENCE: (Code 940)

Suggested GRCC Program: Certificate

This is a one-year certificate program intended to serve the needs of people who choose not to take a full two-year program of study in quality science. It provides students with the knowledge and skills for positions as technicians and inspectors in quality assurance departments.

People who work in the field of quality science monitor and assure the quality of raw materials and finished products in industry. They develop quality assurance plans and procedures, conduct appropriate tests, and prepare detailed reports about the products and processes they study.

Quality Science students at GRCC study quality assurance, statistical process control, gauges and measurement—including the use of the coordinate measuring machine, and geometric tolerancing.

All credits earned in this certificate program may be applied toward the Associate in Applied Arts and Sciences in Quality Science.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Semester

		Credits	Contact Hours
AP 114	Machine Trades Blueprint Reading	2	2.25
BA 101	Business and Technical English 1 OR	3	3/4
EN 100	College Writing OR		
EN 101	English Composition 1		
BA 183	Supervision	3	3
CO —	Computer Elective	2	2
MN 248	Quality Assurance	3	3
TE 103	Technical Mathematics OR	4	4
MA 107	Intermediate Algebra *		
		<hr/>	
		17	

Second Semester

BA 102	Business and Technical English 2 OR	3	3
EN 102	English Composition 2		
BA 254	Business Statistics	3	3

MN 249	Statistical Process Control	3	3
MN 251	Gauges for Measurements	1	2
MN 252	Geometric Tolerancing	2	2
TE 104	Advanced Technical Mathematics OR	3	3
MA 108	Trigonometry *	(2)	2
		<hr/>	
		14/15	
	Total Credits	31/32*	

* The total number of credits required for this certificate may vary by as much as two credits, depending on which mathematics courses the student takes.

QUALITY SCIENCE: (Code 939)

Suggested

GRCC Program: Associate in Applied Arts and Sciences

Note: This program is articulated with the bachelor's degree program in Quality Engineering Technology at Ferris State University in Grand Rapids.

People who work in the field of quality science monitor and assure the quality of raw materials and finished products in industry. They develop quality assurance plans and procedures, conduct appropriate tests, and prepare detailed reports about the products and processes they study. Their jobs are critical in promoting the continuous improvement of products and processes.

Quality science technicians and engineers also review research connected with product defects and quality-control methods, use statistical process control methodology, and make recommendations to improve products and processes. They often must devise unique methods of quality control to assure the quality of the particular products and processes within their area of responsibility.

Quality Science students at GRCC study quality assurance, statistical process control, experimental design, gauges and measurement—including the use of the coordinate measuring machine, and geometric tolerancing. Graduates of this program will be prepared to take the Quality Technician Certification Examination given by the American Society for Quality.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Year

First Semester

		Credits	Contact Hours
AP 114	Machine Trades Blueprint Reading	2	2.25
BA 101	Business and Technical English 1* OR	3	3/4
EN 100	College Writing* OR		
EN 101	English Composition 1*		
BA 183	Supervision	3	3
CO —	Computer Elective	2	2
TE 103	Technical Mathematics OR	4	4
MA 107	Intermediate Algebra*		
MN 248	Quality Assurance	3	3
		<hr/>	
		17	

Second Semester

BA 102	Business and Technical English 2* OR	3	3
EN 102	English Composition 2*		
BA 254	Business Statistics	3	3
MN 249	Basic Statistical Process Control	3	3
MN 251	Gauges for Measurements	1	2
MN 252	Geometric Tolerancing	2	2
TE 104	Advanced Technical Mathematics OR	3	3
MA 108	Trigonometry*	(2)	2
		<hr/>	
		14	15

Second Year

Third Semester

		Credits	Contact Hours
MN 100	Manufacturing Principles OR	2	2
BA 201	Business Communications	(3)	(3)
MN 253	Applied Quality Techniques 1	3	3
PS 110	Survey of American Government	3	3
SC 131	Fundamentals of Public Speaking OR	3	3
SC 135	Interpersonal Communication		
—	— General Electives	4	
		<hr/>	
		15	16

Fourth Semester

MN 254	Experimental Design	3	3
MN 255	Applied Quality Techniques 2	3	3
MN 256	Introduction to Coordinate Measuring Machines OR	2	2
MN 234	Metallurgy	(3)	3
WE —	Wellness	1	
PH 115	Applied Physics OR		
TE 114	Material Science OR	4	6
PH 125	College Physics 1	(4)	(7)
TE 282	Cooperative Education in Technology 1	3	3
		<hr/>	
		16	17

Total Credits **62/65**

* Students intending to transfer to Quality Engineering Technology at FSU should take EN 101 and EN 102 instead of BA 101 and BA 102. Also, they should take MA 107 and MA 108 instead of TE 103 and TE 104.

Transfer Opportunities:

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many

other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Ferris State University-Grand Rapids (updated 12/02)**

This program is for individuals employed in quality or quality-related fields who desire to become employed in a quality position within a manufacturing company. This program is articulated with Quality Science (code 939).

Quality Engineering Technology is available on the main campus in Big Rapids and in Grand Rapids. For information about the program with Ferris in Grand Rapids, contact the academic advisor in Room 182, ATC building, at (616) 451-4777. Additional information is available at www.ferris.edu/grandrapids.

TOOLING AND MANUFACTURING TECHNOLOGY: (Code 920)

Suggested GRCC Program: Certificate

Students will learn both the soft skills and technical skills needed to be a successful technician. Soft skills include teamwork, problem solving, quality principles and communication skills. Technical skills (based on National Skill Standards) include manufacturing principles, introduction to plastics, metallurgy, welding, hydraulics, materials handling, quality assurance, machine shop and technical mathematics.

Graduates of this program are prepared to become certified skilled tradespeople. These positions often pave the way for careers in manufacturing, tool and die, mold making and precision machining.

This program offers the following features:

1. Challenge exams are available for most courses.
2. Advanced standing credits are available for many high school students.
3. Work experience can be gained through Co-op classes.
4. Enrollment may be part-time or full-time, days or nights.

A student seeking this one-year certificate must also complete BA 101 and BA 102.

First Year

First Semester

		Credits	Contact Hours
AP 231	Machinery's Handbook	2	2
CO —	Elective	2	2
EG 110	Industrial Graphics with CAD	3	6
MN 100	Manufacturing Principles	2	2
MN 116	Welding	2	4
MN 234	Metallurgy	3	4
		<hr/>	
		14	

continued—

TOOLING AND MANUFACTURING TECHNOLOGY - cont.

Second Semester

		Credits	Contact Hours
MN 119	Introductory Machine Operations	4	8
MN 249	Statistical Process Control	3	3
MN 235	CNC and NC Machine Programming	3	4
TE 103	Technical Mathematics OR		
MA 107	Intermediate Algebra	4	4
TE 104	Advanced Technical Mathematics OR	3	3
MA 108	Trigonometry	(2)	
		<u>16/17</u>	
Total Credits		30/31	

TOOLING AND MANUFACTURING TECHNOLOGY: (Code 908)

Suggested

GRCC Program: Associate in Applied Arts and Sciences

Note: This program is articulated with the bachelor's degree program in Manufacturing Engineering Technology at Ferris State University in Big Rapids.

The Tooling and Manufacturing Technology program trains technicians for employment in the modern tooling and manufacturing industry. The manufacturing segment of our economy continues to offer a wide variety of rewarding career opportunities. The automation of manufacturing equipment and processing continues to change the world of work, requiring technicians to have increased skills. Graduates of this program will become skilled manufacturing technicians who can meet the needs of a changing world. The manufacturing of products creates thousands of secure technician-level jobs each year, most of which do not require a four-year degree.

Students will learn both the soft skills and technical skills needed to be a successful technician. Soft skills include teamwork, problem solving, quality principles and communication skills. Technical skills (based on National Skill Standards) include machine tool operations, Computer Numerical Control (CNC) programming, Computer Aided Design/Computer Aided Manufacturing (CAD/CAM).

Program graduates are prepared to become manufacturing engineering technicians, skilled tradespersons (tool and die or mold makers), or CNC programmers. These positions often pave the way for careers as an engineering technician; in manufacturing management, industrial sales, or technical training; or owning and operating a company.

Students can tailor the Tooling and Manufacturing program to meet their education and training needs. The program offers the following features:

1. Challenge exams are available for most courses.

2. Advanced standing credits are available for many high school students.
3. Work experience can be gained through Co-op classes.
4. Several career tracks are available to students.
5. Enrollment may be part-time or full-time, days or nights.

The following courses may be taken in any order and at any time they are available as long as prerequisites are met. However, students are expected to confer with a faculty advisor and to base choices on both their own goals and the strength of their previous work experience. At least 60 academic credits are needed for graduation.

Students seeking an Associate in Applied Arts and Sciences degree are required to complete the following course requirements:

First Year

First Semester

		Credits	Contact Hours
CO —	Elective	2	2
EG 110	Industrial Graphics with CAD	3	6
MN 100	Manufacturing Principles	2	2
TE 103	Technical Mathematics OR		
MA 107	Algebra	4	4
TE 104	Advanced Technical Mathematics OR	3	3
MA 108	Trigonometry	(2)	
		<u>13/14</u>	

Second Semester

BA 101	Business and Technical English* OR		
EN 100	College Writing* OR		
EN 101	English Composition 1*	3	3
MN 119	Introductory Machine Operations	4	8
MN 220	Basic Plastics Processing	3	3
PH 115	Technical Physics OR		(6)
TE 114	Material Science	4	5
— —	Career Track Elective	4	+6
		<u>18</u>	

Second Year

Third Semester

BA 102	Business and Technical English* OR		
EN 102	English Composition 2*	3	3
MN 116	Welding	2	4
MN 234	Metallurgy	3	3
MN 235	CNC and NC Machine Programming	3	4
MN 249	Statistical Process Control	3	3
WE —	Wellness	1	2
		<u>15</u>	

Fourth Semester

PS 110	Survey of American Government	3	3
SC 131	Fundamentals of Public Speaking OR		
SC 135	Interpersonal Communication	3	3
— —	Career Track Electives	10	15
		<u>16</u>	

Minimum Credits Required 62/63

* Students intending to transfer into a bachelor's degree program should take EN 101 and EN 102 instead of BA 101 and BA 102; MA 107, MA 108 instead of TE 103 and TE 104. Also, they should take SC 131 instead of SC 135 to satisfy the transfer institution's requirements.

CAREER TRACK ELECTIVES

A student must take a minimum of 13 credit hours from any of the following Tooling/Manufacturing tracks or electives.

Tool and Die

		Credits	Contact Hours
AP 231	Machinery's Handbook	2	2.5
DR 212	Tool Design	2	4
DR 224	Die Design	2	4
DR 225	Advanced Die Design	2	4
MN 137	Fundamentals of TIG and MIG Welding	4	8
MN 200	Intermediate Machine Operations	4	8
TE 282	Cooperative Education in Technology	3	3

Mold Making

AP 231	Machinery's Handbook	2	2.5
DR 241	Mold Design and Theory	3	4
MN 137	Fundamentals of TIG and MIG Welding	4	8
MN 200	Intermediate Machine Operations	4	8
MN 220	Basic Plastics Processing	3	6
MN 223	Injection Molding Theory	3	3
TE 282	Cooperative Education in Technology	3	3

CNC Machining

AP 231	Machinery's Handbook	2	2.5
DR 212	Tool Design	2	4
DR 238	Intermediate CAD	3	4
MN 236	CAM Machine Programming	3	4
MN 237	CAM Operations and Processing	3	4
MN 238	Advanced CNC Programming	3	4
TE 282	Cooperative Education in Technology	3	3

CAD/CAM Programming

AP 231	Machinery's Handbook	2	2.5
DR 238	Intermediate CAD	3	4
DR 250	Introduction to Mechanical Desktop	3	4
DR 258	Introduction to PRO-Engineering	3	4
MN 235	CNC and NC Machine Programming	3	4
MN 236	CAM Machine Programming	3	4
MN 237	CAM Operations and Processing	3	4
MN 238	Advanced CNC Programming Applications	3	4
TE 282	Cooperative Education in Technology	3	3

Manufacturing Production

AP 231	Machinery's Handbook	2	2.5
EL 144	Basic Electricity and Electronics	3	6
EL 164	Programmable Logic Controllers	2	3
MN 137	Fundamentals of TIG and MIG Welding	4	8
MN 217	Hydraulics	3	6
MN 218	Pneumatics	3	4
MN 220	Basic Plastics Processing	3	6
MN 223	Injection Molding Theory	3	3
MN 248	Quality Assurance	3	3
TE 282	Cooperative Education in Technology	3	3

Quality Control

		Credits	Contact Hours
MN 248	Quality Assurance	3	3
MN 251	Gauges for Measurements	1	2
MN 252	Geometric Tolerancing	2	2

MN 253	Applied Quality Techniques 1	3	3
MN 254	Experimental Design	3	3
MN 255	Applied Quality Techniques 2	3	3
MN 256	Introduction to Coordinate Measuring Machines	2	2

Additional Electives Available

BA 103	Introduction to Business	4	4
BA 106	Starting a Business	2	2
BA 156	Accounting Fundamentals	3	3
BA 183	Supervision	3	3

MACHINIST/CNC TECHNICIAN:**GRCC Job Training Choices: (non-credit)****18 Weeks****Overview:**

As a Machine Tool/Computer Numerical Control (MT/CNC) Technician, you will shape metal and various materials to precise dimensions by using machine tools. MT/CNC Technicians plan and set up the correct sequence of machine operations in accordance with blueprints, layouts or other instructions to write both manual and computer-generated machine programs. The Technician is required to use various hand tools, micrometers, gauges and other precision measuring instruments. To be most effective in today's manufacturing environment, you will need to be able to read blueprints, perform basic shop math, read measurement tools, and communicate effectively with others using current Machine Tool/CNC terminology.

Course Recommendations:

The applicant should demonstrate reading and math skills and the desire to work in a manufacturing environment. The ability to work with others, good hand/eye coordination and manual dexterity are also desired.

Cost:

\$3,600

Course Outline:

- Blueprint Reading
- Mathematics
- Using the Machinist Handbook
- Using Hand Tools
- Bench Work
- Layout
- Manual Machine Tool Operations
- Precision Measuring
- CNC and Conversational Machine Tool Operations
- Computer Operation
- Teamwork and Communication Skills

Contact Occupational Training

Information: (616) 234-3800

www.grcc.edu

E-mail: training@grcc.edu

WELDING: (Code 931)**Suggested GRCC Program:** Certificate

Welding is the process of joining pieces of metal by fusing them together. It is the most common method of permanently connecting metal parts in the construction of automobiles, spacecraft, ships, appliances, construction equipment and thousands of other products.

Welding processes differ in the manner in which heat is applied to the parts being joined as well as in the techniques dictated by the nature of the metals involved and the configuration of the pieces. Gas welding uses a flame fueled by a mixture of oxygen and acetylene gases to supply heat, while arc welding uses the heat of a high-voltage electric arc. The nature of the metals being joined often makes it necessary to protect the heated area from the air, and different ways of providing inert gas-shielding (GTAW and GMAW welding processes) of the weld zone have been devised.

This one-year program provides students with a quick way of learning the fundamental skills of welding. Students learn oxyacetylene (gas) welding, arc welding, and inert gas-shielded techniques. All credits earned in this certificate program may be applied toward the Associate in Applied Arts and Sciences in Welding Technology.

Some advanced standing credit may be granted to entering graduates of high school vocational programs that are members of the Kent Metropolitan Articulation Project.

The following scheduling is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Semester		Credits	Contact Hours
EG 110	Industrial Graphics with CAD	3	6
MN 134	Oxyacetylene Welding	3	4
MN 136	Basic Arc Welding	4	8
TE 103	Technical Mathematics (9.2 weeks)	4	4
TE 104	Advanced Technical Mathematics (6.8 weeks)	3	3
		<hr/>	
		17	
Second Semester			
EL 146	Programmable Logic Controller	2	3
MN 137	Fundamentals of TIG and MIG Welding	4	8
MN 138	Welding, Fabrication, Design, and Testing	4	8
MN 234	Metallurgy	3	3
		<hr/>	
		13	
Total Credits		30	

WELDING TECHNOLOGY: (Code 932)**Suggested****GRCC Program:** Associate in Applied Arts and Sciences

Note: This program is articulated with the bachelor's degree program in Manufacturing Engineering Technology at Ferris State University in Big Rapids.

Welding is the process of joining pieces of metal by fusing them together. It is the most common and efficient method of permanently connecting metal parts in the construction of automobiles, spacecraft, ships, appliances, construction equipment and thousands of other products.

Welding processes differ in the manner in which heat is applied to the parts being joined as well as in the techniques dictated by the nature of the metals involved and the configuration of the pieces. Gas welding uses a flame fueled by a mixture of oxygen and acetylene gases to supply heat, while arc welding uses the heat of a low-voltage electric arc. The nature of the metals being joined often makes it necessary to protect the heated area from the air, and different ways of providing inert gas-shielding (GTAW and GMAW welding processes) of the weld zone have been devised.

Graduates of this program have gone to work in the aerospace, boiler and piping, construction and repair welding industries. Upon completion of this program, students are eligible for testing and certification to the American Welding Society Welding Code. They are also eligible for testing as associate welding inspectors in the AWS code.

Students at GRCC learn oxy/fuel, shielded metal, gas tungsten, gas metal, and pipe welding. These skills qualify them for a wide variety of welding jobs in manufacturing, construction and maintenance industries. Job opportunities for trained welders are expected to increase in the years ahead. The U.S. Department of Labor publication *Occupational Outlook Quarterly* states that "... employment of skilled welders will grow, and job prospects will be good."

Some advanced standing credit may be granted to entering graduates of high school vocational programs that are members of the Kent Metropolitan Articulation Project.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Year

First Semester		Credits	Contact Hours
EG 110	Industrial Graphics with CAD	3	6
MN 134	Oxyacetylene Welding	3	4
MN 136	Basic Arc Welding	4	8
TE 103	Technical Mathematics (9.2 weeks)	4	4
TE 104	Advanced Technical Mathematics (6.8 weeks)	3	3
		<hr/>	
		17	

Second Semester

EL 164	Programmable Logic Controller	2	3
MN 137	Fundamentals of TIG and MIG Welding	4	8
MN 138	Welding, Fabrication, Design, and Testing	4	8
TE 114	Material Science	4	5
		<u>14</u>	

Second Year**Third Semester**

BA 101	Business and Technical English 1* OR	3	3/4
EN 100	College Writing* OR		
EN 101	English Composition 1*		
EL 144	Basic Electricity and Electronics	3	6
MN 100	Manufacturing Principles *	2	2
MN 119	Introductory Machine Operations	4	8
MN 234	Metallurgy	3	3
WE —	Wellness	1	2
		<u>16</u>	

Fourth Semester

BA 102	Business and Technical English 2* OR	3	3
EN 102	English Composition 2 *		
MN 140	Pipe Welding	5	8
MN 217	Hydraulics OR	3	6
MN 218	Pneumatics	3	4
PS 110	Survey of American Government	3	3
— —	Humanities Elective *	3	
		<u>17</u>	

Total Credits 64

* Students intending to transfer to Manufacturing or Welding Engineering Technology at FSU should take DR 228 instead of MN 100 and should take SC 131 as their Humanities Elective. They should also take EN 101 and EN 102 instead of BA 101 and BA 102; and MA 107 and MA 108 instead of TE 103 and 104.

WELDING/FABRICATION TECHNICIAN:**GRCC Job Training Choices: (non-credit)**

18 Weeks

Overview:

As a Production Welder, your job may include basic duties such as cutting, brazing and welding of various metal components as well as more advanced duties such as MIG and TIG welding using aluminum and stainless steel. Welders will need to have an understanding of metallurgy, American Welding Quality Standards, and welding equipment maintenance. To be most effective in the manufacturing environment today, you will need to be able to read blueprints, perform basic shop math, read measurement tools, and communicate effectively with others using current welding terminology.

Course Recommendations:

The applicant should demonstrate reading and math skills and the desire to work in a manufacturing environment. The ability to work with others, good hand/eye coordination and manual dexterity are also desired.

Cost:

\$3,600

Course Outline:

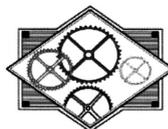
- Introduction and Shop Safety
- Basic Welding Theory
- Math and Measuring
- Blueprint Reading
- Shielded-Metal Arc Welding, LAP, TEE, 1,2,3,4G Test Plates
- Oxe-acetylene Welding, All Joints
- Gas-metal Arc Welding (MIG), Steel
- Gas-metal Arc Welding (MIG), Aluminum
- Flux-cored Arc Welding (FCAW)
- Gas-tungsten Arc Welding (TIG), Steel, Aluminum, Stainless Steel
- Plasma-Arc Cutting
- Submerged Arc Welding
- Computer Operation
- Teamwork and Communication Skills

Contact *Occupational Training*

Information: (616) 234-3800

www.grcc.edu

E-mail: training@grcc.edu

MATH AND PHYSICS

**Engineering, Manufacturing,
and Industrial Technology**

GRCC Educational Choices:

Associate in Arts and Sciences

Associate in Arts (MACRAO Agreement)

Contact: *Counseling Department*
(616) 234-4130

Why is GRCC's Engineering Pathway program for you?

GRCC's Engineering Pathway program provides a strong background in mathematics, science, and computer technology. This background will prepare students to continue their education successfully at a four-year institution and work towards their area of specialization.

Some of the four-year institutions where GRCC engineering transfer students have been very successful include:

- Calvin College
- Eastern Michigan University
- Ferris State University

continued—

- Grand Valley State University
- Kettering University (GMI)
- Lake Superior State University
- Lawrence Technological University
- Michigan State University
- Michigan Technological University
- Oakland University
- Saginaw Valley State University
- University of Detroit Mercy
- University of Michigan
- Wayne State University
- Western Michigan University

ENGINEERING:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

SAMPLE PROGRAMS OF STUDY:

- **Grand Valley State University (GVSU)** (updated 12/02)
- **Michigan Technological University**
- **University of Michigan**

FIRST YEAR	
First Semester	Second Semester
EN 1013	EN 1023
MA 1335	MA 1345
EG 1202	CO 1273
WE Activity1	PH 2455
U. S. Diversity3	EG 1212
CM 103 or 1134	
18	18

SECOND YEAR	
First Semester	Second Semester
WE Activity1	MA 2574
MA 2554	EC 251 or 2523
PH 2465	PS 1103
PL 2053	World Perspectives . . .3
Humanities3	Soc. Sci./Hum.3
16	16

Direct Transfer Into The Co-op Engineering Program

Students may transfer directly into GVSU's cooperative engineering education program by substituting seven or eight GVSU engineering courses for courses in the above curriculum. The substitution will depend on the emphasis area that the student intends to pursue after transfer to GVSU.

FIRST YEAR DIRECT TRANSFER--ALL	
First Semester	Second Semester
EN 1013	EGR 1033
MA 1335	MA 1345
EG 120 or 1212	CO 1273
CM 103 or 1134	PH 2455
WE1	
15	16

SECOND YEAR DIRECT TRANSFER--COMPUTER	
First Semester	Second Semester
MA 2554	MA 2574
PH 2465	MA 2454
EGR 2093	STA 3123
EGR 2263	CS 2623
EGR 2891	EGR 2143
16	17

SECOND YEAR DIRECT TRANSFER--ELECTRICAL	
First Semester	Second Semester
MA 2554	MA 2574
PH 2465	EC 2523
EGR 2093	STA 3123
EGR 2263	EGR 2553
EGR 2891	EGR 2143
16	16

SECOND YEAR DIRECT TRANSFER--MANUFACTURING OR MECHANICAL	
First Semester	Second Semester
MA 2554	MA 2574
PH 2465	EC 2523
EGR 2093	STA 3123
EGR 2263	EGR 2503
EGR 2891	EGR 2143
16	16

NOTE: Students who anticipate this procedure must apply for transfer to GVSU and for acceptance into the B.S.E. Co-op program by August 31 of the year prior to trans-

fer to GVSU. Students must consult with a GVSU advisor prior to their application. These co-op engineering students enter the program in May immediately following completion of their GRCC program (the same as GVSU students do). The program involves full-time participation for the next seven continuous semesters (28 months): four academic and three alternating cooperative work semesters.

■ **Michigan State University (MSU)** (updated 12/02)

This curriculum for students interested in a career in engineering involves a 4 or 5 year program depending on the student's background and area of specialization. A five year program is recommended to incorporate co-op experiences.

FIRST YEAR

First Semester		Second Semester	
EN 100 or 101	.....3	EN 102	.....3
MA 133	.....5	MA 134	.....5
CM 103 or 113 (1)	...4	CO 124 (3)	.....3
BI 103, 104 or 127	...4	HS 249 or 250	.....3
	16		14

SECOND YEAR

First Semester		Second Semester	
MA 255	.....4	MA 257	.....4
PH 245	.....5	PH 246	.....5
PL 201, AT 105 (2)	...3	PY 201	.....3
PS 110	.....3	EG 208 (4)	.....3
	15		15

* Minimum course requirements.

Notes:

1. Not required for Computer Science
 2. For additional Humanities, see Transfer Section, MSU, in the GRCC catalog.
 3. Computer science, Computer Engineering and Electrical Engineering majors must take CO 127 in place of CO 124.
- * MSU's Engineering Committee reviews applications on a rolling basis. Spaces are limited in each engineering discipline. Students are encouraged to apply early.
 - * A minimum overall GPA of 3.0 is required for consideration.
 - * This curriculum does not meet the requirements for an AA or AS at GRCC.
 - * See a GRCC counselor for further information.

For more information, contact:

Engineering Undergraduate Studies Office
 1415 Engineering Building
 Michigan State University
 East Lansing, MI 48824
 (517) 355-6616
 web.egr.msu.edu

MATHEMATICS:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

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■ **Aquinas College**

■ **Calvin College**

■ **Grand Valley State University** (updated 12/02)

SAMPLE PROGRAM OF STUDY:

FIRST YEAR

First Semester		Second Semester	
EN 100 or 101	.....3	EN 102	.....3
Humanities	.....3	MA 134	.....5
PS 110	.....3	Humanities	.....3
MA 133	.....5	Elective	.....3
WE	.....1	WE	.....1
	15		15

SECOND YEAR

First Semester		Second Semester	
MA 255	.....4	Lab Science	.....4
CO 127	.....3	MA 257	.....4
Humanities	.....3	Electives	.....8
Social Science	.....3	Math Elective	.....4
Math Elective	.....3		
	16		20

Transferable math course options: MA 215 and MA 245

PACKAGING:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

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■ Michigan State University (updated 12/02)

The program trains personnel for marketing, production, research, and development positions in packaging and packaging material, manufacturing and using industries. There are two options available: management and technical.

FIRST YEAR	
First Semester	Second Semester
EN 100 or 1013	EN 1023
CM 103*4	BI 1274
HS 249 or 2503	MA 110*4
BA 2564	Humanities3
WE1	
15	14

SECOND YEAR	
First Semester	Second Semester
MA 133 or 1295	CO 124 or 1103
EC 251 or 2523	Humanities4
PH 125*4	PH 1264
PL 201, EN 2333	Humanities4
	PS 1103
15	18

* Prerequisites for admission consideration including a 2.0 minimum GPA.

Notes:

1. The above courses will meet the general education requirements of MSU as well as fulfill the MACRAO.
2. See a GRCC counselor.

For more information, contact

Jane Crowner
Student Affairs Office
112 Packaging Bldg.
Michigan State University
East Lansing MI 48824
(517) 353-8966
crowner3@msu.edu

PHYSICS:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

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■ Aquinas College

■ Ferris State University

■ Grand Valley State University (updated 12/02)

FIRST YEAR	
First Semester	Second Semester
EN 100 or 1013	EN 1023
MA 1335	MA 1345
CM 103 or 1134	CM 104 or 1144
Humanities/Soc. Sci. . . .3	Humanities/Soc. Sci. . .3
WE Activity1	WE Activity1
16	16

SECOND YEAR	
First Semester	Second Semester
MA 2554	U. S. Diversity3
Humanities3	PH 2465
World Perspective3	PS 1103
PH 2455	Elective3
CO 1273	
18	14

Note: Degree offered: B.S.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

SURVEYING:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

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■ **Ferris State University** (updated 12/02)

Big Rapids Campus

See printable Transfer Guide at:

www.ferris.edu/admissions/transfer/webpages/

For more information, contact:

Educational Counselor, Vordyn Nelson
 Phone: (231) 591-2890
 e-mail: nelsonv@ferris.edu



Health Sciences

Health Sciences

Do you like to care for people or animals? Are you interested in diseases or how the body works? Would it be fun to learn first aid or volunteer at a hospital or veterinary clinic?

This program of study relates to the promotion of health as well as the treatment of injuries and disease. Examples of careers in this pathway are physicians, nurses, and veterinarians. You may be sensitive to the needs or pains of people and/or animals and express the following personality qualities:

- ◆ Friendly
- ◆ Empathic
- ◆ Tactful
- ◆ Humanistic
- ◆ Religious faith
- ◆ Patience
- ◆ Dependable
- ◆ Capable

Careers related to the promotion of health as well as the treatment of injuries and diseases are:

- ◆ Physician
- ◆ Medical Secretary
- ◆ Respiratory Therapist
- ◆ Dietitian
- ◆ Optometrist
- ◆ Medical Office Assistant
- ◆ Pharmacist
- ◆ Registered Nurse
- ◆ Occupational Therapy Assistant
- ◆ Emergency Medical Technician
- ◆ Licensed Practical Nurse
- ◆ Dentist
- ◆ Chiropractor
- ◆ Rehabilitation Therapist
- ◆ Recreational Therapist
- ◆ Dental Assistant/Hygienist
- ◆ Physical Therapy Assistant
- ◆ X-ray Technician

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HEALTH



Health Sciences

GRCC Educational Choices:

Associate in Arts (MACRAO Agreement)

**Contact: Health Admissions
(616) 234-4348**

Health Admission Procedures

All new students must meet the requirements for admission to the College before being considered for any of the health programs. Students should contact the Admissions Office at 616-234-4100 to request the program information packet including an application. Following acceptance to the College, formal application and acceptance from the Health Admissions Office is required. The health programs offered at GRCC are:

- Associate Degree Nursing
- Dental Assisting
- Occupational Therapy Assistant
- Practical Nursing
- Dental Hygiene
- Radiologic Technology

Students who choose to enroll in any of the health programs must complete the GRCC application and indicate the appropriate health program plan code. A current GRCC student must complete a (curriculum) plan code change form. This form may be obtained in the Admission's Office, 105 Main Building or in the Health Admission Coordinator's Office, 502 College Park Plaza Office.

It is important for interested student applicants to know that completed applications are ranked for order of admission into the program. Student applicants are first ranked according to the date that they complete all the specific program entrance requirements (see individual program requirements). Therefore, applicants should complete these items first and as soon as possible. When there is more than one student who completes the admission procedures on any given date, then those students are ranked according to the date of their original application to the particular health program. In the rare instance where students have identical ready and application dates, they are ranked alphabetically.

After program requirements have been met, the Health Admissions Coordinator will assign a health ready date. A letter announcing acceptance to the chosen health program is sent and students are invited to meet with the program staff to develop an (EDP) educational development plan. In programs with waiting lists, there may be some time between the original acceptance letter and the EDP meeting.

To ensure successful progress towards entering a health program, it is the student's responsibility to confirm that records, transcripts and any other documents are received by the Health Admissions Office. Do this by calling 616-234-4348.

- To be eligible for graduation, students must complete a two-year program within five years and a one-year program within four

years from taking the first course in the designated program.

- In addition to tuition, fees and books, there are also costs for uniforms, transportation, supplies, etc. Estimates of additional costs may be obtained from each Program office.
- Individuals who have a history of chemical, latex or other sensitivities and/or allergies which occur in the work or clinical environment should be aware such conditions may limit the applicant's ability to complete the clinical requirements of the GRCC health programs. Specific requirements must be met for graduation from each respective GRCC health program.
- Individuals who elect not to have the hepatitis B vaccination series should be aware such conditions may limit the applicant's ability to complete the clinical requirements of the GRCC health programs. Specific requirements must be met for graduation from each respective GRCC health program.
- Students with felony convictions may be prevented from taking state or national licensure and registry examinations. This may impact employment options following completion of the health programs.
- Effective, 2002, federal and state laws require students assigned to long term care facilities, nursing homes, county medical care facilities and homes for the aged to have criminal background checks. GRCC will secure student's consent to perform these criminal checks and release the findings to the facility.

DENTAL



Health Sciences

GRCC Educational Choices:

Certificate

Associate in Applied Arts and Sciences

**Contact: Health Admissions
(616) 234-4348**

DENTAL ASSISTING:

(Students should initially enroll in Code 322)

Suggested GRCC Program:

Certificate or Associate in Applied Arts and Sciences

Few careers offer the diversity and flexibility that dental assisting does. There are opportunities for part-time and full-time employment; chairside, office and laboratory work; and patient education. Most dental assistants work in private dental offices. Others, however, may work in dental schools, hospital dental departments, public health departments, dental laboratories, or public and private dental clinics. There are also opportunities to work in the offices of dental specialists such as pediatric dentists and orthodontists. Trained dental assistants are often in short supply, making graduates highly employable.

This curriculum allows students to qualify, in less than one year, for jobs as both Certified and Registered Dental Assistants. The GRCC program is accredited by the Commission on Dental Accreditation of the American Dental Association (ADA) and approved by the Michigan Board of Dentistry.

At the conclusion of their first ten months of training and education at GRCC, graduates will have earned a GRCC Certificate in Dental Assisting. The graduate is eligible to sit for the Dental Assisting National Board examination to become a Certified Dental Assistant (CDA). The graduate is also eligible to sit for the Michigan RDA Examination to become a Registered Dental Assistant in Michigan.

Requirements for licensure as an RDA in the state of Michigan are as stated in the Michigan Public Health Code, Public Act 368 of 1978. The new applicant for licensure will be asked about felony convictions, misdemeanor convictions resulting in imprisonment, and convictions for possession of controlled substances (including those involving alcohol related to motor vehicle violations). Previous convictions may prevent the applicant from receiving a license.

Students learn through a three-way combination of classroom, laboratory and clinical experiences. Not only are the latest dental techniques stressed throughout the curriculum, but students also learn how to use computers in modern dental offices.

Following completion of the 10-month curriculum, students may return to GRCC and earn an Associate in Applied Arts and Sciences degree by taking eight or nine more courses in the liberal arts.

Program Requirements

In order to be eligible for admission into the Dental Assisting program, students must:

1. Be high school graduates or have passed the high school equivalency GED (General Educational Development) Test.
2. Have a highschool GPA of at least 2.0.
3. Score at least 50% on the GRCC mathematics assessment test.*
4. Score at least at the 10th grade level on the GRCC English reading comprehension test.*

* Applicants with a year or more of proven academic success in a related college curriculum may qualify to have these requirements waived by the Director of Dental Programs.

In addition to tuition, fees and books, there are also costs for uniforms, dental instruments, etc. Estimates of additional costs may be obtained from the Health Admission Office or the Dental Auxiliary Program Director.

In order to be eligible for graduation, Dental Assisting students must earn a minimum cumulative GPA of 2.0 in the prescribed Dental Assisting curriculum.

Course Requirements for the One-Year Certificate:

Fall Semester	Credits	Meeting Time			
		CH*	Lec	Lab	Clinic
DA 105 Nutrition and Oral Disease Prevention (7 weeks)	2	2	4	0	0
DA 112 Science for the Dental Assistant (7 weeks)	2	2	4	0	0
DA 116 Assisting in General Dentistry (2nd 7 weeks)	6	10	4	16	0
DA 118 Dental Biomaterials (2nd 7 weeks)	2	3	2	4	0
DA 120 Dental and Oral Anatomy, Histology and Embryology for DA (7 weeks)	2	2	4	0	0
DX 104 Infection Control for Dentistry (3.5 weeks)	2	2	4	4	0
DX 115 Introduction to Dentistry (7 weeks)	2	2	4	0	0
WE 156 First Aid*	1	2	2	0	0
		<u>18 (19 w/WE 156)</u>			

* WE 156 is not required if the student can document current CPR/BLS for the Professional Rescuer certification prior to the end of the first semester.

Winter Semester

DA 126 Assisting in Dental Specialties	4	6	2	4	0
DA 128 Principles of Dental Assisting (1st 10.5 weeks)	5	7.5	2	8	0
DA 129 Applied Principles of Dental Assisting (last 3.5 weeks)	2	2	0	0	12
DA 130 Applied Principles of Dental Assisting Seminar (last 3.5 weeks)	1	1	2	0	0
DA 139 Management of the Dental Office	3	3	3	0	0
DA 160 Oral Pathology for Dental Assisting	1	1	1	0	4
DX 126 Dental Radiography (theory and lab first 7 weeks, clinic last 7 weeks)	4	6	4	4	4
		<u>20</u>			

Summer Session

DA 208 Dental Assisting Clinical Practice	8	8	0	0	32
DA 209 Dental Assisting Clinical Practice Seminar	1	1	2	0	0
		<u>9</u>			

Total Credits 47 (48 w/WE156)

* CH = Contact hours: The number of class hours of attendance required per week. A virgule (/) separates "lecture" hours (listed first) from "laboratory" hours. Excess contact hour fees are charged when the number of lab/lecture hours exceeds the number of credits. This does not include the CD 280 course.

continued—

DENTAL ASSISTING - cont.

The following additional course work may be taken in order to qualify for the Associate in Applied Arts and Sciences degree in Dental Assisting:

College Course		Contact Credits	Hours
BA 101	Business and Technical English 1	OR	
EN 100	College Writing	OR	
EN 101	English Composition 1***	3	
BA 102	Business and Technical English 2	OR	
EN 102	English Composition 2***	3	
PS 110	Survey of American Government	3	
WE —	Wellness Elective	1 (2 if no WE 156)2	
PY 201	General Psychology	3	
— —	Humanities Elective	3	
SC 135	Interpersonal Communication	3	
SO 251	Principles of Sociology	3	
		22 (23 if 2 credits WE)	

Total Credits for AAAS 70

*** Students interested in continuing their education toward a bachelor's degree at a four-year college or university should select these courses.

DENTAL HYGIENE:

(Students should initially enroll in Code 324)

Suggested GRCC Program:**Associate in Applied Arts and Sciences**

The dental hygienist—the preventive specialist—fills a key position on the dental health team. Graduates of the associate degree curriculum may assume a variety of major roles in the prevention of dental disease.

Dental hygiene practice includes obtaining clients' medical and dental histories, conducting extraoral and intraoral examinations, performing diagnostic procedures, providing complete oral prophylaxis (scaling and polishing teeth) and polishing restorations, and placing pit and fissure sealants.

GRCC's program in dental hygiene is accredited by the Commission on Dental Accreditation of the American Dental Association, a specialized accrediting body recognized by the Council on Postsecondary Accreditation and by the U.S. Department of Education.

Graduates will be eligible to take national and regional board examinations to qualify for licensure as Registered Dental Hygienists. Requirements for licensure as an RDH in the state of Michigan are stated in the Michigan Public Health Code, Public Act 368 of 1978. The new applicant for licensure will be asked about felony convictions, misdemeanor convictions resulting in imprisonment, and convictions for possession of controlled substances (including those involving alcohol related to motor vehicle violations). Previous convictions may prevent the applicant from receiving a license.

Dental hygienists work in private and group dental practices, departments of public health, hospitals, schools, clinics, veterans

facilities and the armed forces. Job opportunities for trained dental hygienists are expected to be good in the years ahead.

Program Requirements

In order to be eligible for admission into the Dental Hygiene program, students must:

1. Be high school graduates or have passed the high school equivalency GED (General Educational Development) Test.
2. Have a high school GPA of at least 2.0.
3. Have completed one-year courses in high school chemistry and biology with at least a grade of "C" in each. (Suitable equivalent courses are available at GRCC for college credit.)
4. Score at least 80% on the GRCC mathematics assessment test.
5. Score at least at the 12th grade level on the GRCC English reading comprehension test.

In order to be eligible for graduation, Dental Hygiene students must earn a minimum cumulative GPA of 2.0 in the prescribed Dental Hygiene curriculum.

- The GRCC Dental Hygiene program now takes a minimum of 3 years to complete. The first year (Pre-Dental Hygiene) consists of non-dental courses. BI 121, BI 122, BI 127 and CM 210 are required prerequisites for entering the second year, when the actual dental hygiene courses begin. The four science courses must be completed with a "C" (2.0) or higher in order to continue in the "program entry" year of the Dental Hygiene Program.
- Entering students are highly encouraged to complete all of the non-dental courses prior to beginning the second year. This way scheduling is much less complex and the student can focus all energies on the professional training part of the program.
- All courses in the second and third year of the Dental Hygiene program must be completed by the end of the semester designated in the prescribed curriculum.

Pre-Dental Hygiene (Prerequisites)

First Semester	Credits	Meeting Time			
		CH*	Lec	Lab	Clinic
BI 121† Human Anatomy and Physiology 1	3	5	3	2	0
BI 127† General Microbiology	4	7	3	4	0
EN 100 College Writing** OR					
EN 101 English Composition 1 **	3		3	0	0
SO 251, or SO 254, or SO 260 ***	3		3	0	0
PY 201 General Psychology**	3		3	0	0
	16				
Second Semester*	Credits	Meeting Time			
		CH*	Lec	Lab	Clinic
BI 122† Human Anatomy and Physiology 2	3	5	3	2	0
CM210† Inorganic, Organic, and Biochemistry	4	6	4	2	0

EN 102 English Composition 2**	3	3	0	0	
WE 156† First Aid **	1	2	2	0	0
SC 131, or SC 135, or GH 120**	3		3	0	0
	<u>13 (14 w/PE 156)</u>				

First Year (Program Entry)

Third Semester (Fall)

DH 113 Dental Head and Neck Anatomy, Embryology and Histology	5	6	4	2	0
DH 119 Pre-Clinical 1	6	10	2	8	0
DH 120 Nutrition for the Dental Hygienist (last 10.5 weeks)	3	3	4	0	0
DX 104 Infection Control in Dentistry (1st 3.5 weeks)	2	2	4	4	0
DX 115 Introduction to Dentistry (1st 7 weeks)	2	2	4	0	0
	<u>18</u>				

Fourth Semester (Winter)

DH 117 Applied Oral Disease Prevention and Preventive Therapies	3	3	3	0	0
DX 126 Dental Radiography (theory and lab first 7 weeks, clinic last 7 weeks)	4	6	4	4	4
DH 129 Pre-Clinical 2 (lab changes to clinic after 1st 7 weeks)	6	10	2	8	8
DH 192 General Oral Pathology for Dental Hygiene	3	3	3	0	0
	<u>16</u>				

Summer Session (7 weeks)

DH 182 Applied Dental Biomaterials	2	3	2	4	0
DH 209 Clinical Dental Hygiene 1	3	6	0	0	12
DH 217 Client Care and Management 1	2	2	4	0	0
DH 234 Periodontology 1	1	1	2	0	0
	<u>8</u>				

Second Year (Dental Hygiene Courses)

Fifth Semester (Fall)

DH 205 Dental Specialties	2	2	2	0	0
DH 214 Community Dental Health 1	2	2	2	0	0
DH 219 Clinical Dental Hygiene 2	6	12	0	0	12
DH 227 Client Care and Management 2	4	5	3	0	2 Arr
DH 235 Periodontology 2	2	2	2	0	0
DH 266 Pharmacology for Dental Hygiene	2	2	2	0	0
	<u>18</u>				

Sixth Semester* (Winter)	Credits	Meeting Time			
		CH*	Lec	Lab	Clinic
DH 224 Community Dental Health 2	1	1	1	0	0
DH 229 Clinical Dental Hygiene 3	6	12	0	0	12
DH 237 Client Care and Management 3	3	3	2	0	2
DH 275 Dental Ethics and Jurisprudence	1	1	1	0	0
DH 276 Dental Hygiene Professional Seminar	1	1	1	0	0
WE— Wellness Elective (if needed)**	1(2)	2	2(4)		0
PS 110 Survey of American Government **	3		3	0	0
	<u>16(17)</u>				

Total Dental Credits 72
Total Non-Dental Credits 34

† These courses must be completed with a “C” (2.0) or better prior to starting the third semester of the program. They may be completed prior to when they appear in the curriculum.

** These courses may be completed prior to when they appear in the Dental Hygiene curriculum.

‡ WE 156 is not required if the student can document current CPR/BLS for the Professional Rescuer certification prior to the end of the third semester.

NURSING



Health Sciences

GRCC Educational Choices:

**Certificate
Associate in Nursing**

**Contact: Health Admissions
(616) 234-4348**

ASSOCIATE DEGREE NURSING:

(Students should initially enroll in Code 321)

Suggested GRCC Program: Associate in Nursing

Associate Degree Nursing is a two-year program (four semesters and one summer session) approved by the Michigan Board of Nursing and accredited by the NLNAC, 61 Broadway, New York, NY 10006; 1-800-669-1656 ext.153. The new applicant for licensure will be asked about substance abuse and/or felony conviction.

continued—

ASSOCIATE DEGREE NURSING - cont.

Previous felonies or misdemeanors for substance abuse, physical abuse, and/or criminal sexual conduct may prevent an applicant from taking the licensure exam NCLEX-RN and/or employment. Upon request, the Nursing Director will provide a list of rules and regulations governing licensure and employment in Michigan.

Program Requirements

In order to be eligible for admission into the Associate Degree Nursing program, students must:

1. Be high school graduates or have passed the high school equivalency GED (General Educational Development) Test.
2. Have a high school grade point average (GPA) of at least 2.5.
3. Have completed one-year courses in high school chemistry, biology and algebra with at least a grade of "C" in each. (Suitable equivalent courses available at GRCC are CM 101, BI 101, or any Biology with a lab, and MA 104.)
4. Score at least 80% on the GRCC mathematics assessment test.
5. Score at least at the 12th grade level on the GRCC English reading comprehension test.

Candidates may apply for entry into the program at the end of their junior year in high school. To be eligible for the ADN, students must earn a minimum cumulative grade point average of 2.0 (80%) in the prescribed ADN curriculum.

In addition, to be eligible for graduation, a minimum grade of "C" (2.0) is required in each of the required nursing courses.

Opportunities exist for Licensed Practical Nurses (LPNs) and persons who have completed all of the GRCC Practical Nursing Program to enter the ADN program with advanced standing. Contact the Director of Nursing Programs for additional information.

Graduates of the Associate Degree Nursing program may transfer all or part of the credit earned at GRCC to several colleges and universities toward a Bachelor of Science in Nursing (BSN) degree.

First Year**First Semester**

		Credits	Contact Hours	MT*
AD 104	Foundations of Nursing (1st 7 weeks)**	2	2	4
AD 105	Nursing Assessment of the Healthy Person (2nd 7 weeks)	3	6	4/8
BI 121	Human Anatomy and Physiology 1** or	3	5	3/2
EN 100	College Writing or	3	4	
BA 101	Business and Technical English	3	3	
EN 101	English Composition 1 **	3		3
GH 120	Therapeutic Relationships **	3		3
PY 201	General Psychology **	3		3
WE —	Wellness	1	2	2
		<u>18</u>		

Second Semester

AD 112	Nursing of the Person with Simple Health Needs	6	12	4/8
AD 113	Nursing of the Person with Mental Health Needs	4	10	2/8
BI 122	Human Anatomy and Physiology 2 **	3	5	3/2
PY 232	Developmental Psychology **	3		3
		<u>16</u>		

Summer Session

BI 127	General Microbiology **	4	7	6/8
		<u>4</u>		

Second Year**Third Semester**

AD 202	Family Nursing: Childbearing (7 weeks)	4	8.5	5/12
AD 203	Family Nursing: Child Rearing (7 weeks)	4	8.5	5/12
AD 204	Family Nursing: Aging	3	6	2/4
EN 102	English Composition 2 ** or	3	3	
BA 102	Business and Technical English 2	3	3	
SO —	Any Sociology except SO 295, 298, 299**	3	3	
		<u>17</u>		

Fourth Semester

AD 220	Nursing of the Client with Complex Health Needs (7 weeks)	5	9	6/12
AD 221	Nursing of the Client with Critical Health Needs (3.5 weeks)	2	4	4/12
AD 222	Nursing Care Management (3.5 weeks)	3	7	4/24
PS 110	Survey of American Government **	3		3
		<u>13</u>		
	Total Credits	68		

* MT = Meeting Time: The number of 60-minute class hours of attendance required per week. A virgule (/) separates "lecture" hours (listed first) from "laboratory" or "clinical" hours.

** Only these courses may be taken prior to formal admission into the Associate Degree Nursing program. There is a time limit of eight years on BI 121, BI 122 and BI 127.

NURSING:**Transfer Opportunities:****(Students should enroll in code 511)**

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced

over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Grand Valley State University** (updated 12/02)

FIRST YEAR

First Semester	Second Semester
EN 100 or 1013	EN 1023
MA 1074	BI 1274
BI 1044	World Perspective . . .3
CM 1095	PS 1103
WE Activity1	WE Activity1
	Humanities3
17	17

SECOND YEAR

First Semester	Second Semester
BI 1213	BI 1223
PY 2013	PY 2323
CM 2314	CM 2414
Humanities3	PY 2814
U. S. Diversity3	Humanities3
16	17

Notes:

1. Degree offered: B.S.N.
2. Applicants must meet the following criteria: (1) G.P.A. of 2.7 or above and (2) completion of pre-nursing courses with a grade of "C" or above.
3. If time permits, CA 250 and BI 232 are appropriate choices.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

■ **Ferris State University** (updated 12/02)

This program is designed expressly for associate degree and diploma RNs wishing to earn a B.S.N. degree on a part-time basis without leaving their home, family, and work.

This program is available at both the Big Rapids and Grand Rapids campuses.

Grand Rapids Campus
www.ferris.edu/grandrapids

Big Rapids Campus
 See printable Transfer Guide at:
www.ferris.edu/admissions/transfer/webpages/

For more information, contact:

Educational Counselor, Mary Steeno
 Toll-free Phone: 1-800-462-8553
 Phone: (231) 591-2270
 e-mail: steenom@ferris.edu

■ **Central Michigan University**

PRACTICAL NURSING:

(Students should initially enroll in Code 323

for full-time or Code 354 for part-time)

Suggested GRCC Program: Certificate

Licensed practical nurses (LPNs) care for the physically or mentally ill. Under the direction of registered nurses, physicians or dentists, they provide nursing care that requires considerable specialized knowledge. Job opportunities for LPNs are expected to be very good in the years ahead.

The Practical Nursing program at GRCC can be taken on a full-time or part-time basis. This program is two semesters and one summer session approved by the Michigan Board of Nursing and accredited by NLNAC, 61 Broadway, New York, NY 10006; 1-800-669-1956 ext.153. The new applicant for licensure will be asked about substance abuse and/or felony conviction. Previous felonies or misdemeanors for substance abuse, physical abuse, and/or criminal sexual conduct may prevent an applicant from taking the licensure exam NCLEX-RN and/or employment. Upon request, the Nursing Director will provide a list of rules and regulations governing licensure and employment in Michigan.

Prospective students may apply for entry into the Practical Nursing program at the completion of their junior year in high school.

Full-time students are admitted to the program once a year for the Winter semester. Students with jobs and/or other pressing responsibilities are encouraged to take this program on a part-time basis. Part-time students are admitted twice annually. Details are available in the Nursing program Office.

Program Requirements

In order to be eligible for admission into the Practical Nursing program, students must:

1. Be high school graduates or have passed the high school equivalency GED (General Educational Development) Test.
2. Have a highschool GPA of at least 2.0.
3. Score at least 50% on the GRCC mathematics assessment test.
4. Score at least at the 10th grade level on the GRCC English reading comprehension test.

To be eligible for graduation, Practical Nursing students must earn a minimum cumulative grade point average of 2.0 (80%) in the prescribed PN curriculum. In addition, to be eligible for graduation, a minimum grade of "C" (2.0) is required in each of the required nursing courses.

PRACTICAL NURSING - cont.

Students are expected to supply their own textbooks, supplies, uniforms, transportation, parking and fees.

At GRCC, opportunities exist for graduates of the Practical Nursing program to enter the Associate Degree Nursing program with advanced standing. Students interested in following this path should consult with the Director of Nursing Programs as early as possible.

Winter Semester		Credits	Contact Hours	MT*
GH 125	Introduction to the Structure and Functions of the Human Body (1st 11 weeks) **	3		4
GH 126	Microbiology for Health Care (last 3 weeks) **	1		4
WE 156	First Aid**	1	2	2
PN 115	Introduction to Practical Nursing (1st 7 weeks)	3		6
PN 117	Health and Wellness (1st 7 weeks)	4		8
PN 119	Direct Care 1 (2nd 7 weeks)	8	10.25	11.5/9
		<u>20</u>		
Summer Session (Required)				
PN 132	Direct Care 2 (1st 7 weeks)	7	10.25	8/13
PN 135	Family Nursing (2nd 7 weeks)	7	10.5	8/13
		<u>14</u>		
Fall Semester				
PN 141	Direct Care 3 (1st 7 weeks)	7	10.5	7.5/15
PN 143	Role Adjustment (4 weeks)	5	7.75	8.5/22
		<u>12</u>		
Total Credits		46		

* MT = Meeting Time: The number of 60-minute class hours of attendance required per week. A virgule (/) separates "lecture" hours (listed first) from "laboratory" or "clinical" hours.

** May be taken prior to admission into the Practical Nursing program.

OCCUPATIONAL THERAPY ASSISTANT



Health Sciences

GRCC Educational Choices:

Associate in Applied Arts and Sciences

**Contact: Health Admissions
(616) 234-4348**

OCCUPATIONAL THERAPY ASSISTANT:

(Students should initially enroll in Code 328)

Suggested GRCC Program:

Associate in Applied Arts and Sciences

Occupational therapy assistants work under the supervision of registered occupational therapists to help rehabilitate patients who are physically or mentally disabled. They help develop and implement programs of educational, vocational and recreational activities that strengthen patients' muscle power, increase motion and coordination, and develop self-sufficiency in overcoming disabilities. They must be able to speak and write clearly and correctly in order to effectively serve physically and emotionally disabled clients.

Employment opportunities for occupational therapy assistants are diverse. Areas include the following: rehabilitation facilities, hospitals, schools, psychiatric settings, home health care, industrial rehabilitation programs, schools, long term care centers, and community agencies.

Students interested in the OTA program are advised to take preparatory courses in biological and behavioral sciences such as anatomy, physiology, and psychology. All applicants will be asked to take an English placement test, since good writing skills are essential for success as an occupational therapy assistant.

Occupational Therapy is a profession in which members are required to give care to others; therefore, it is necessary that the learner be able to reach a minimum level of competency.

The occupational therapy assistant student will need to develop the skills necessary to relate to others and to demonstrate the characteristics of self-awareness, self-acceptance, awareness of others and the ability to communicate that awareness. Therapists need to cope effectively with the emotional demands of the environment and to interact effectively with a variety of people. A therapist must be capable of subordinating personal feelings and must possess sufficient emotional stamina to deal with patients who will depend on him/her for emotional and psychological support during therapy.

Students will be required to perform certain physical functions in order to successfully complete the Occupational Therapy Assistant

program. These functions will be performed throughout the course work and/or clinical experience. These functions are not conditions for admission to the program; they are listed to alert the prospective student to the physical and emotional functions required as an occupational therapy assistant. If a student requires accommodations, it is his/her responsibility to contact Disability Support Services at (616) 234-4140.

The physical functions include:

1. **Physical Strength** - A therapist will assist in transferring patients to or from wheelchairs, floors, mats, toilets, cars, beds, bathtubs, and showers. Other transfers may be required. These patients may be paralyzed or have some degree of incapacity such as poor balance, strength, coordination and endurance. The therapist may also have to move equipment, patients in wheelchairs, woodworking tools and craft equipment.
2. **Mobility** - In the course of performing duties in occupational therapy, a therapist will be expected to stand, lift, reach, bend, stretch, provide support and stability, and perform activities on a floor mat. Sufficient independent mobility within the architectural environment is necessary. A therapist must move quickly in an emergency, may have to quickly move patients, and may also perform treatment in a standing position over a long period of time.
3. **Hearing** - A therapist should have the ability to hear faint sounds from a distance of 4 feet —approximately the distance between a patient seated in a wheelchair and a person in a standing position next to the wheelchair. A therapist may be required to hear sounds such as those emitted by an electric hand saw, electric drill, motorized wheelchair, and blood pressure (using a stethoscope).
4. **Visual Discrimination** - A therapist should have sufficient vision to be able to differentiate movements, to read markings on instruments and measuring devices, and to read newspaper small print.
5. **Coordination** - Sufficient motor skills, eye-hand coordination skills, manipulative skills and sensory function in at least one upper extremity may be needed by a therapist to assist with therapeutic activities. Many other therapeutic activities require dexterity, manipulation, strength, and body flexibility.
6. **Manual Dexterity** - A therapist should have sufficient fine motor skills to manipulate objects and people safely. Manual dexterity to fabricate splints, to assist a patient with completion of therapeutic projects/activities, and to demonstrate fine motor movements is also required.
7. **Communication Skills** - A therapist should be able to communicate orally and in writing. For example, a therapist should be able to read and give directions and instructions and to record health data regarding patients/clients.

Students are admitted to the program once a year for the Fall semester.

Program Requirements:

In order to be eligible for admission into the Occupational Therapy Assistant program, students must:

1. Be high school graduates or have passed the high school equivalency GED (General Educational Development) Test.
2. Have a high school GPA of at least 2.0.
3. Have completed a one-year course in high school biology with a grade of at least "C." (Suitable equivalent courses are available at GRCC for college credit.)
4. Score at least 80% on the GRCC mathematics assessment test.
5. Score at least at the 12th grade level on the GRCC English reading comprehension test.
6. Have completed one semester course of high school computers focusing on computer literacy, Internet skills, retrieval and management of information with a grade of at least a "C".

In order to be eligible for graduation, OTA students must earn a minimum cumulative GPA of 2.0 in the prescribed OTA curriculum.

The OTA program prepares assistants for entry level into the profession and meets the educational standards for program accreditation. The OTA program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), located at 4720 Montgomery Lane, PO Box 31220, Bethesda, MD 20824-1220. AOTA's phone number is (301) 652-AOTA. Graduates of the program will be able to sit for the national certification examination for the occupational therapy assistant administered by the National Board for Certification in Occupational Therapy (NBCOT). Individuals who apply to write the certification examination with the NBCOT will be asked to answer questions related to the topic of felonies. For further information on limitations, you can contact NBCOT at 800 S. Frederick Ave, Suite 200, Gaithersburg, MD 20877-4150; (301) 990-7979. After successful completion of this exam, the individual will be a Certified Occupational Therapy Assistant (COTA).

Most states require licensure in order to practice; however, state licenses are usually based on the results of the NBCOT Certification Examination. The State of Michigan requires registration for therapists to practice.

Those OTA graduates who wish to pursue a master's degree and the credential of Registered Occupational Therapist (OTR) may apply for entry into the Occupational Therapy programs at Western Michigan University, Eastern Michigan University, Grand Valley State University, or Wayne State University. Presently, there are several professional-level education programs directed toward providing specific career advancement for certified occupational therapy assistants. Assistants may apply to other professional programs, but their previous training does not automatically include a transfer of credits or eligibility.

Students in the OTA program should be prepared to pay for their own textbooks, liability insurance, uniforms and insignia, OTA examination fee and some supplies, as well as transportation and parking. These costs can add about \$1,000 a year to the usual tuition and fees.

continued—

OCCUPATIONAL THERAPY ASSISTANT - cont.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Year

First Semester		Credits		Meeting Time		
		CH*	Lec	Lab	Clinic	
BI 121	Human Anatomy and Physiology 1**	3	5	3	2	0
CD 118	Human Growth and Development 1**	4	5	3	2	0
GH 120	Therapeutic Relationships **	3	3	3	0	0
OT 102	Introduction to Occupational Therapy **	3	3	3	0	0
OT 104	Occupational Therapy Concepts and Terms	1		1	0	0
OT 108	Therapeutic Interventions 1	3	5	2	3	0
PY 201	General Psychology **	3		3	0	0
		<u>20</u>				

Second Semester

BI 122	Human Anatomy and Physiology 2 **	3	5	3	2	0
CD 120	Human Growth and Development 2 **	3		3	0	0
EN 100	College Writing** OR					
EN 101	English Composition 1**	3		3	0	0
OT 109	Therapeutic Interventions 2	3	5	2	3	0
OT 110	Disabling Conditions	4		4	0	0
PY 231	Abnormal Psychology **	3		3	0	0
		<u>19</u>				

Summer Session (Required)

PS 110	Survey of American Government **	3		3	0	0
WE 156	First Aid **	1	2	2	0	0
		<u>4</u>				

Second Year**Third Semester**

EN 102	English Composition 2 **	3		3	0	0
OT 208	Therapeutic Interventions 3	3	5	2	3	0
OT 214	Kinesiology in Occupational Therapy	3		3	0	0
OT 220	Fieldwork 1	1	3	0	0	15
OT 224	Fieldwork Seminar 1	1	3	1	0	0
SP 141	Spanish for Healthcare Professionals	?		?	?	?
		<u>15</u>				

Fourth Semester

OT 230	Fieldwork 2 (16 weeks) ***	10	10	0	0	40
OT 235	Fieldwork Seminar 2	2	3	2	0	0
		<u>12</u>				

Total Credits 69

** Only these courses may be taken prior to formal admission into the Occupational Therapy Assistant program. There is a time limit of eight years on BI 121 and BI 122.

*** Students are encouraged to complete all non-OT classes before Fieldwork 2, OT 230/235. OT 230 requires 16 weeks of full-time (40 hours/week) fieldwork. Level 2 Fieldwork must be completed within 20 months of the didactic course work for an OTA program.

OCCUPATIONAL THERAPY:**Transfer Opportunities:****(Students should enroll in code 513)**

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Grand Valley State University (updated 12/02)**FIRST YEAR**

First Semester	Second Semester
EN 100 or 101 3	EN 102 3
MA 110 4	BA 254, 3/4
CM 109 5	MA 215, or PY 281 . . . 3/4
BI 103 4	BI 104 4
WE Activity 1	PY 201 3
	Humanities 3
	WE Activity 1
	17
	17/18

SECOND YEAR

First Semester	Second Semester
BI 121 3	BI 122 3
Humanities 3	Humanities 3
AN 210 3	PY 232 3
U. S. Diversity 3	PS 110 3
PY 231 3	SO 261 3
	15
	15

Notes: admission criteria is as follows:

1. Academic achievement of a minimum 3.0 G.P.A. in preprofessional courses and in the last 60 hours of undergraduate work.
2. Recommendation letters (two), including a registered occupational therapist and a professor who can comment on your academic performance.
3. An interview and an extemporaneous writing sample.
4. Documented volunteer experience for a minimum of 50 hours, under the supervision of an occupational therapist.
5. Completion of form detailing activities of student which reflect core goals of the program.
6. Maximum class size is 30. Admission decisions will be made in the first semester of the calendar year.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

■ **Western Michigan University (WMU)** (updated 12/02)

In 1999 the American Occupational Therapy Association elected to require a master's degree for the practice of occupational therapy, to take effect in 2007. WMU has prepared for this change by implementing a new five year (4+1) program leading to two degrees, a Bachelor of Science in Interdisciplinary Health Services (HSV) and a Master of Science in Occupational Therapy. This 4+1 program consists of four years of undergraduate work and a fifth and final year (30 hours) of graduate coursework.

Fall of 2003 will be the first opportunity for transfer students to begin the professional 4+1 program described here. As in the past, selection will be a competitive process. Completion of prerequisite course work, a minimum cumulative grade point average of 2.8, and the completed departmental application will be considered in the admission process. The application deadlines for September 1 for Winter semester and January 30 for Fall semester.

In order to move students toward their M.S. degree as efficiently as possible, professional Occupational Therapy courses will begin earlier in the new program. As a result, transfer students are encouraged to apply for transfer after two semesters with the prerequisite course requirements (below), which will allow them to graduate in a timely fashion. Students admitted to the OT track in HSV will move through the program as a cohort, and those who successfully complete the undergraduate portion are assured of admission to the graduate degree program. Following graduation with the master's degree, a national certification examination must be passed before entering into practice or engaging in advanced studies.

RADIOLOGIC TECHNOLOGY



Health Sciences

GRCC Educational Choices:

Associate in Applied Arts and Sciences

**Contact: Health Admissions
(616) 234-4348**

RADIOLOGIC TECHNOLOGY: (Students should initially enroll in Code 325)

Suggested

GRCC Program: Associate in Applied Arts and Sciences

Graduates of this program, upon successfully completing the registry examination of the American Registry of Radiologic Technologists (ARRT), are prepared for positions in medical facilities, government, public health and education. The Radiologic Technology program at GRCC is accredited by the Joint Review Committee on Education in Radiologic Technology.

The employment outlook continues to be very favorable for radiologic technologists.

Clinical practicums associated with GRCC's program have been established within a 40-mile radius of Grand Rapids. These practical experiences seek to heighten students' awareness of patient communication practices and to acquaint them with all phases of radiologic technology practice, which often varies from hospital to hospital. The personal contacts developed during clinical experiences often help students in securing jobs after graduation.

Students will be required to perform certain physical functions in order to successfully complete the program. These functions will be performed throughout the course work and/or clinical experience. However, these functions are not conditions for admission to the program. They are listed to alert the student to what physical functions will be expected. Students who require accommodation should contact the Coordinator of Disability Support Services at (616) 234-4140.

The physical functions include:

1. Physical Strength— The student will assist in transferring patients from wheelchairs and beds to x-ray tables and vice versa. Patients may be comatose, paralyzed or suffering from some degree of incapacity. The student may have to move heavy equipment, such as a portable x-ray machine, to different locations.

continued—

RADIOLOGIC TECHNOLOGY - cont.

- Mobility— In the course of performing duties in radiography, the student will be expected to stand and reach overhead to position the x-ray tube hanging from the ceiling; he/she must move quickly in an emergency and must be able to perform work while standing for long periods of time.
- Hearing— The student must have the ability to hear faint sounds from a distance of 15 feet— the approximate distance between the control panel of exposure switches and the x-ray table where the patient is being placed. He/she must also be able to hear faint signals emitted by a dysfunctioning machine.
- Visual Discrimination— The student must have vision which enables him/her to differentiate changing colors of x-ray films and to read markings on dials, monitors etc.
- Coordination— Good motor skills, eye-hand coordination skills, and sensory function in at least one upper limb are needed to align body parts of a patient with the film. Some of the other functions requiring dexterity include filling syringes, putting on surgical gloves, and manipulating locks on equipment.
- Manual Dexterity— Gross motor skills such as standing, walking, and writing are all required to perform the duties of a radiologic technologist. In addition, fine motor skills are needed (such as the ability to make insertion of IV lines, calibrate equipment, draw blood, and so on).
- Communication Skills— The student must be able to communicate orally and in writing. For example, he/she must be able to read and give directions and instructions and to record health data from patients.

The Radiologic Technology program is a two-year program and requires attendance for four semesters and two summer sessions.

Program Requirements

In order to be eligible for admission into the Radiologic Technology program, students must:

- Be high school graduates or have passed the high school equivalency GED (General Educational Development) Test.
- Have a high school GPA of at least 2.0.
- Have completed one-year courses in high school biology and algebra with at least a grade of "C" in each. (Suitable equivalent courses are available at GRCC for college credit.)
- Score at least 50% on the GRCC mathematics assessment test.
- Score at least at the 10th grade level on the GRCC English reading comprehension test.
- Students with felony convictions may be prevented from taking the national registry examination. This may impact employment options flowing completion of the RT program.

In addition to tuition, fees and books, there are also costs for uniforms, etc. Estimates of additional costs may be obtained from the Program office.

In order to be eligible for graduation, Radiologic Technology students must earn a minimum cumulative GPA of 2.0 in the prescribed Radiologic Technology curriculum.

First Year

		Credits	Meeting Times*			
			CH*	Lec	Lab	Clinic
BI 121	Human Anatomy and Physiology 1 **	3	5	3	2	0
CO 101	Introduction to Computer Applications **	2		2	0	0
GH 110	Medical Terminology 1**	2		2	0	0
WE —	Wellness Elective **	1	2	2	0	0
RT 100	Orientation to Health Care #	2		2	0	0
RT 110	Radiographic Positioning 1	4	5	3	2	0
RT 111	Radiographic Exposure 1	3	5	3	2	0
		<u>17</u>				

		Credits	Meeting Times*			
			CH*	Lec	Lab	Clinic
BI 122	Human Anatomy and Physiology 2 **	3	5	3	2	0
BA 101	Business and Technical English 1** OR					
EN 100	College Writing ** OR					
EN 101	English Composition 1 **	3		0	0	0
RT 112	Radiographic Positioning 2	4	5	3	2	0
RT 113	Radiographic Exposure 2	3	5	3	2	0
RT 130	Clinical Practicum in Radiologic Technology 1	3	3	0	0	16
		<u>16</u>				

Summer Session I (Required)

RT 131	Clinical Practicum in Radiologic Technology 2	4	4	0	0	40
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Second Year**Third Semester**

BA 102	Business and Technical English 2** OR					
EN 102	English Composition 2 **	3		0	0	0
PS 110	Survey of American Government **	3		0	0	0
RT 207	Radiation Protection	2		0	0	0
RT 210	Radiographic Positioning 3	4	5	3	2	0
RT 211	Survey of Medical-Surgical Diseases	2		2	0	0
RT 230	Clinical Practicum in Radiologic Technology 3	3	3	0	0	24
		<u>17</u>				

Fourth Semester

PY 201	General Psychology **	3		0	0	0
RT 212	Radiographic Positioning 4	4	5	3	2	0
RT 213	Radiologic Leadership Skills	2		0	0	0
RT 215	Physics of X-Ray	4	6	3	3	0
RT 231	Clinical Practicum in Radiologic Technology 4	3	3	0	0	24
		<u>16</u>				

Summer Session II (Required)

RT 232 Clinical Practicum in Radiologic Technology 5 4 4 0 0 40

Total Credits **74**

* Meeting Times: The number of class hours of attendance required per week.

** These Arts and Sciences courses may be taken prior to admission to the Radiologic Technology program.

Clinical observation is required during the summer preceding entry into the Radiologic Technology program.

GENERAL HEALTH AND PRE-PROFESSIONAL



Health Sciences

GRCC Educational Choices:

Associate in Arts (MACRAO Agreement)

**Contact: Counseling Department
(616) 234-4130**

MEDICAL TECHNOLOGY:

Transfer Opportunities:

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Ferris State University** (updated 12/02)

To prepare clinical laboratory professionals who perform tests on specimens such as blood, urine and spinal fluids. This data aids physicians in diagnosis and treatment of disease processes and the monitoring of patient progress. Clinical laboratory per-

sonnel may also work in physician offices, pharmaceutical companies and private laboratories.

Big Rapids Campus

See *printable Transfer Guide* at:

www.ferris.edu/admissions/transfer/webpages/

For more information, contact:

Educational Counselor, Mary Steeno

Toll-free Phone: 1-800-462-8553

Phone: (231) 591-2270

e-mail: steenom@ferris.edu

PHYSICAL THERAPY:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Grand Valley State University** (updated 12/02)

FIRST YEAR	
First Semester	Second Semester
EN 100 or 1013	EN 1023
MA 1104	BA 254, MA 215, or PY 281 . .3/4
CM 1095	BI 1044
BI 1034	SO 2543
PY 2013	Humanities3
	WE Activity1
19	17/18

continued—

SECOND YEAR**First Semester**

BI 121	.....3
Humanities	.....3
PS 110	.....3
CM 231	.....4
PH 125	.....4

Second Semester

WE Activity	.....1
Humanities	.....3
PY 232	.....3
CM 241	.....4
PH 126	.....4
World Perspective	...3
B! 122	.....3

17

21

PROFESSIONAL PROGRAM**ADMISSION CRITERIA:**

1. Academic achievement. Students must have a minimum average GPA of 3.0 in pre-professional program course requirements, and in their last 60 hours of course work.
2. Communication and interpersonal skills. On-site interviewing and essay writing required.
3. Recommendations. Two recommendations must be submitted. One must be from a licensed physical therapist.
4. Observational experience. A minimum of 50 hours of observational experience in physical therapy is required.
5. Additional activities. Additional educational, professional, leadership, scholarly and volunteer activities are valued and must be documented.
6. Technical standards. Individuals must be able to perform all technical standards of the physical therapy program.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

■ Central Michigan University**PHYSICIAN ASSISTANT:****Transfer Opportunities:**

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples

of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Grand Valley State University (updated 12/02)**FIRST YEAR****First Semester**

EN 100 or 101	.....3
MA 107	.....4
CM 109	.....5
BI 103	.....4
PY 201	.....3

19

Second Semester

EN 102	.....3
BA 254, MA 215, or PY 281	..3/4
BI 104	.....4
SO 251	.....3
Humanities	.....3
WE Activity	.....1

17/18

SECOND YEAR**First Semester**

BI 121	.....3
Humanities	.....3
PS 110	.....3
CM 231	.....4
World Perspectives	...3

16

Second Semester

WE Activity	.....1
Humanities	.....3
PY 232	.....3
CM 241	.....4
U. S. Diversity	.....3
BI 122	.....3
BI 127	.....4

18

Notes:

1. Academic achievement. Student must have a minimum G.P.A. of 3.0 in pre-professional program course requirements, and in their last 60 hours of course work.
2. Two formal letters of recommendation from appropriate health professionals. Letters from practicing Physician Assistants would be most appropriate.
3. Writing samples.
4. Experience. Applicants should show evidence of 250+ hours of significant volunteer, work, or observational experience in a health care environment.
5. Students are accepted for fall entrance only. Students will be informed of admission decisions by May 1.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

■ Western Michigan University**■ Central Michigan University**

PRE-DENTAL:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Grand Valley State University (updated 12/02)

FIRST YEAR

First Semester	Second Semester
EN 100 or 1013	EN 1023
MA 1082	BI 2323
CM 1134	CM 1144
BI 1034	Humanities/Soc. Sci. .3
WE Activity1	WE Activity1
U. S. Diversity3	BI 1044
17	18

SECOND YEAR

First Semester	Second Semester
BI 1213	BI 1223
Humanities3	Humanities/Soc. Sci. .3
World Perspectives . . .3	PS 1103
CM 2665	CM 2675
MA 1104	BA 254, MA 215, or PY 281 .3/4
18	17/18

Notes:

1. Degree offered: B.S.
2. This program is designed to prepare students for postgraduate programs. Postgraduate programs of two years or less include administrative assistant, histological technology, medical technology, occupational therapy, pharmaceutical sales, physical therapy, physician assistant, respiratory therapy, and surgeon assistant. Postgraduate programs of four years or more include chiropractic, dentistry, human medicine, optometry, podiatry, veterinary medicine and graduate programs in the biological sciences.
3. Students may want to complete some of the above science classes after they transfer to Grand Valley State University.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

■ University of Michigan

■ Western Michigan University

PRE-MEDICAL:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Michigan State University (updated 12/02)

High school preparation recommended: College preparatory curriculum; mathematics including algebra, geometry and trigonometry; foreign language.

FIRST YEAR

First Semester	Second Semester
EN 100 or 1013	EN 1023
CM 103 or 1134	CM 104 or 1144
MA 133 (5)5	BI 1044
HS 249 or 2503	BA 254 or MA 134 3-5
WE1	WE1
16	15-17

SECOND YEAR

First Semester	Second Semester
EN 233, 235, 237, 242, 261 or 2623	Humanities6
BI 1034	CM 2674
PH 1254	PH 1264
PS 1103	Social Science3
CM 2664	
18	17

continued—

PRE-MEDICAL - cont.**Notes:**

1. Social science electives: anthropology, economics, geography, political science, psychology, sociology, history.
2. Humanities elective: music listening, music history, art appreciation, philosophy.
3. Students transferring with 42 or more credits are advised to major in the College of Natural Sciences.
4. For non-science majors, take MA 108 and MA 110.
5. See a GRCC counselor.

For more information, contact:

Judy Schwinghamer
314 N. Kedzie
Michigan State University
East Lansing, MI 48824
(517) 353-8951 or (517) 353-7800
schwing1@msu.edu

■ **University of Michigan**■ **Grand Valley State University****PRE-OPTOMETRY:****Transfer Opportunities:**

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Ferris State University (FSU) (updated 12/02)**

Admission into FSU's College of Optometry is based upon an evaluation of the candidates' academic and clinical potential. Students with three and four years of college credit are accepted into the program on an equal opportunity basis.

Big Rapids Campus

See *printable Transfer Guide* at:

www.ferris.edu/admissions/transfer/webpages/

For more information, contact:

Assistant Dean, Dr. Rodney Larson
Phone: (231) 591-3780
e-mail: larsonr@ferris.edu

PRE-PHARMACY:**Transfer Opportunities:**

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Ferris State University** (updated 12/02)

Students interested in a career in pharmacy follow a 6-year (2+4) program leading to a Doctor of Pharmacy (Pharm.D.) degree. Courses in the first two years provide background for later technical courses and include liberal arts experience. Students interested in the Ferris State University College of Pharmacy should familiarize themselves with the detailed requirements as stated the FSU catalog.

Big Rapids Campus

See *printable Transfer Guide* at:

www.ferris.edu/admissions/transfer/webpages/

■ **University of Michigan****PRE-LAW:****Transfer Opportunities:**

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Grand Valley State University**■ **Michigan State University**■ **University of Michigan**

PRE-VETERINARY:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Michigan State University (MSU) (updated 12/02)

This curriculum prepares students for transfer to MSU and application to the professional program in the College of Veterinary Medicine. The professional veterinary medical program is four years in length. Most successful applicants have completed at least three years of undergraduate study, including pre-veterinary requirements and courses applicable to a Baccalaureate degree of their choice. Consequently, students may either (1) transfer to the Pre-veterinary Program at MSU after completing the 1-year program below or (2) transfer to the Baccalaureate degree-granting MSU major of their choice at junior standing after completing the 2-year program below. (The 'Pre-veterinary' major classification at MSU is open to freshmen and sophomores only; all junior level MSU students must be enrolled in a degree-granting major.)

High school preparation recommended: College preparatory curriculum; mathematics through trigonometry; chemistry, biology, and physics.

FIRST YEAR

First Semester	Second Semester
EN 100 or 1013	EN 1023
CM 103 or 1134	HS 249 or 2503
BI 1034	BI 1044
PL 201, 202; EN 233, . .	MA 1104
235 or 2373	CM 104 or 1144
WE1	
15	18

SECOND YEAR

First Semester	Second Semester
CM 2665	CH 2675
PH 1254	PH 1264
Humanities3	Humanities3
PS 1103	Social Science*3
15	15

* Additional courses to meet GRCC degree minimum and MSU Humanities/Social Science requirements (either full or potential completion).

For acceptance into the College of Veterinary Medicine, four hours of upper level Biochemistry are required.

Notes:

1. Humanities elective: Art appreciation, history, music history, music listening, philosophy, or sophomore literature classes. These may also be taken at MSU.
2. Social Science elective: Anthropology, economics, geography, political science, psychology, or sociology.
3. A maximum of 100 students (out of approximately 1000 applicants) is admitted to the professional program in the College of Veterinary Medicine each year with a new class entering each September. Admission priority is given to Michigan residents. Other factors considered in determining an applicant's relative competitive position are: cumulative GPA for all college coursework; GPA for the required pre-veterinary science courses only; scores from the Medical College Admissions Test or the Graduate Record Examination; interview; veterinary exposure and animal experience; and extra-curricular activities.
4. Students with 42 or more transfer credits cannot choose "pre-vet" major. They should choose a biological science or animal science major.
5. See a GRCC counselor.

For more information, contact:

Pre-Veterinary Advising Center
(517) 355-6510
www.cvm.msu.edu

■ Western Michigan University

■ Grand Valley State University

OCCUPATIONAL SAFETY AND HEALTH:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Grand Valley State University (updated 12/02)

FIRST YEAR	
First Semester	Second Semester
EN 100 <i>or</i> 1013	EN 1023
MA 1074	BA 254, MA 215, <i>or</i> PY 281 . . .3
CM 1095	BI 1044
BI 1034	World Perspective . . .3
WE Activity1	Humanities/Soc. Sci. .3
17	16
SECOND YEAR	
First Semester	Second Semester
BI 1213	BI 1223
Humanities3	Humanities3
CH 2314	PY 2013
PS 1103	CH 2414
U. S. Diversity3	WE1
16	14

Note: Degree offered: B.S.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

PUBLIC HEALTH:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Central Michigan University (updated 12/02)

FIRST YEAR	
First Semester	Second Semester
EN 1013	EN 1023
SC 131, 135, 227 <i>or</i> 241*3	PS 1103
PY 2013	CM 1014
BI 1014	SO 2513
Humanities4	Humanities4
17	17
SECOND YEAR	
First Semester	Second Semester
MA 107*4	BI 1174
BI 1274	WE1
WE1	Electives**10
Electives**7	
16	15

* CMU requires a minimum grade of "C" or better for these courses.

** CMU will grant 24 semester hours of academic credit upon display of licensure from the State of Michigan or receipt of a certificate of program completion from the following GRCC health programs: Dental Hygiene, Occupational Therapy Assisting, Practical Nursing, Radiologic Technology. Note: If you hold a current Michigan R.N. License, you will be granted 60 semester hours and may follow the Public Health Curriculum or any major on the Applied Arts and Sciences Degree program. Contact CMU Admissions.

Notes:

1. CMU and GRCC participate in the MACRAO Agreement. Refer to the section of this catalog entitled, "General Education for Transfer Student."
2. CMU expects its graduates to demonstrate competency in three areas: English Composition, Math and Speech. A grade of "C" or better in the following GRCC courses will fulfill these requirements: EN 101, 102; MA 107 or higher, and SC 131, 135, 227, or 241.

WELLNESS

Health Sciences



Additional Choices: Transfer Opportunities (MACRAO Agreement)

Contact: *Counseling Department*
(616) 234-4130

ATHLETIC TRAINING:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Grand Valley State University** (updated 12/02)

FIRST YEAR

First Semester	Second Semester
EN 100 or 101 .....3	EN 102 .....3
MA 107 .....4	WE 144 .....1
PE 184 .....3	WE Activity .....1
PS 110 .....3	World Perspectives ..3
Humanities .....3	BI 121 .....3
	Humanities .....3
	16
	14

SECOND YEAR

First Semester	Second Semester
WE 125 .....1	WE Activity .....1
WE Activity .....1	MA 215 .....4
PE 195 .....2	Humanities .....3
U.S. Diversity .....3	PY 233 or 232 .....3
PY 201 .....3	CO 110 .....3
BI 122 .....3	
Elective .....3	
	16
	14

Notes:

1. Degree offered: B.S.
2. It is recommended that a student interested in this program take the general education requirements for one year and then transfer to GVSU.
3. Athletic Training is accredited by the Commission on Accreditation of Allied Health Education Programs. This program is available only to those students who apply and are admitted through the formal admission process. The number of students admitted into the Athletic Training curriculum depends on the availability of clinical spots, which will vary from semester to semester.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

■ **Western Michigan University**

SPORTS MEDICINE:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

continued—

SPORTS MEDICINE - cont.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Central Michigan University (CMU)** (updated 12/02)

A course of study for students who wish to become athletic trainers or want to become more knowledgeable in the field of sports medicine.

FIRST YEAR

First Semester	Second Semester
EN 101 .....3	EN 102 .....3
PY 201 .....3	PS 110 .....3
SC 131, 135, 227 or 241 .....3	PY 232 .....3
BI 101 .....4	CM 103 .....4
Humanities .....3	Humanities .....3
16	16

SECOND YEAR

First Semester	Second Semester
MA 107 .....4	BI 122 .....3
BI 121 .....3	Lab Science .....4
WE 156 .....1	PE 198 .....3
Electives .....5	Electives .....6
13	16

Notes:

1. Consult with CMU's Physical Education Department regarding the limited enrollment and admission to this program.
2. CMU and GRCC participate in the MACRAO Agreement. Refer to the section of this catalog entitled, "General Education for Transfer Students."
3. CMU expects its graduates to demonstrate competency in three areas: English Composition, Math and Speech. A grade of "C" or better in the following GRCC courses will fulfill these requirements: EN 101, 103; MA 110 or higher; and SC 131, 135, 227, or 241.
4. Sports Medicine Program: (989) 774-6687.
5. BI 121 and BI 122 both must be taken for credit.

■ **Western Michigan University**

THERAPEUTIC RECREATION:**Transfer Opportunities:**

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Grand Valley State University** (updated 12/02)

FIRST YEAR

First Semester	Second Semester
EN 100 or 101 .....3	EN 102 .....3
MA 107 .....4	CM 109 .....5
BI 103 .....4	PY 281 .....4
Humanities .....5	BI 104 .....4
PY 201 .....3	WE .....1
17	17

SECOND YEAR

First Semester	Second Semester
WE .....1	BI 122 .....3
PS 110 .....3	PY 232 .....3
BI 121 .....3	World Perspective ...3
PY 231 .....3	Humanities .....3
Humanities .....3	GH 110 .....2
U. S. Diversity .....3	
16	14

Notes:

1. Degree offered: B.S.
2. It is strongly recommended that students complete the MACRAO and then transfer to GVSU for their sophomore year. The required freshman Therapeutic recreation courses are not available at GRCC.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.



Human Services

Human Services

Are you friendly, open, understanding, and cooperative? Do you like working with people to solve problems? Do you like reading, storytelling, traveling, or tutoring young children?

This program of study relates to childcare, civil service, education, hospitality, and the social services. Careers in the pathway include counselors, teachers, and religious leaders (rabbi, priest, or minister). You may be sensitive to the needs of others and express the following personality qualities:

- ◆ Friendly
- ◆ Persuasive
- ◆ Religious Faith
- ◆ Outgoing
- ◆ Tactful
- ◆ Humanistic

Careers related to helping people improve their life physically, socially or emotionally are:

- ◆ Childcare Provider
- ◆ Security Guard
- ◆ Special Ed Teacher
- ◆ Minister
- ◆ Missionary
- ◆ Funeral Director
- ◆ Guidance Counselor
- ◆ YWCA/YMCA Director
- ◆ College Instructor
- ◆ Elementary Teacher
- ◆ Police Officer
- ◆ Economist
- ◆ Social Worker
- ◆ Foreign Language Teacher
- ◆ Athletic Trainer
- ◆ Physical Ed Teacher
- ◆ Social Worker
- ◆ Recreation Leader
- ◆ Speech Pathologist
- ◆ Social Science Teacher
- ◆ School Administrator
- ◆ Hotel/Motel Manager
- ◆ Urban Planner
- ◆ Lawyer

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BEHAVIORAL SCIENCE



Human Services

GRCC Educational Choices:

Associate in Arts (MACRAO Agreement)

**Contact: Counseling Department
 (616) 234-4130**

ANTHROPOLOGY:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Grand Valley State University** (updated 12/02)

FIRST YEAR	
First Semester	Second Semester
EN 100 or 101 .....3	EN 102 .....3
MA 107 .....4	AN 205 .....3
AN 210 .....3	SO 251 .....3
PS 110 .....3	BI 103 or 104 .....4
MU 107 .....3	PL 201 .....3
16	16

SECOND YEAR	
First Semester	Second Semester
Elective .....3	Elective .....4
SO 254 .....3	Humanities .....3
AN 280 .....3	SO 295 .....3
HS 101 .....4	CO 110 .....3
WE .....1	WE .....1
14	14

continued—

Note: Degrees offered: B.A., B.S. Students seeking the B.A. degree must demonstrate third semester proficiency in a foreign language. Students seeking the B.S. degree must take MA 215 and BI 232.

HUMAN ECOLOGY:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Michigan State University (MSU) (updated 12/02)

FIRST YEAR	
First Semester	Second Semester
EN 100 or 101 .....3	EN 102 .....3
PL 201, EN 233, 235 (1) .....3	HS 249 or 250 .....3
Physical Science (1,2) .4	MA 110 .....4
PS 215 .....3	Bio Science (1,2) ...4
13	14

It is advised to transfer after one year.

Notes:

1. For a greater selection of courses in this category, see the MSU section of the GRCC catalog.
2. Include a lab with one of the sciences.

Students in Dietetics, Foods/Nutrition and Nutritional Sciences should include CM 103, 104; MA 110; PY 201.

* See a GRCC counselor.

For more information, contact:

Regan Kania
kania@msu.edu
7 Human Ecology Building
Michigan State University
East Lansing, MI 48824
(517) 355-7690

■ Western Michigan University

PSYCHOLOGY:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Grand Valley State University (updated 12/02)

FIRST YEAR	
First Semester	Second Semester
EN 100 or 101 .....3	EN 102 .....3
PY 201 .....3	Humanities .....3
PS 110 .....3	PY 281 .....4
Humanities .....3	PY 232 .....3
MA 107 .....4	WE .....1
WE .....1	
17	14

SECOND YEAR	
First Semester	Second Semester
PY 203 .....3	PY 234 .....3
Humanities .....3	U. S. Diversity .....3
PY 231 .....3	Science Lab .....4
World Perspective ....3	Electives .....6
Elective .....3	
15	16

Note: Degrees offered: B.A., B.S. Students seeking the B.A. degree must demonstrate third semester proficiency in a foreign language.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

■ **Aquinas College** (updated 12/01)

Prepares students who seek to be professional psychologists for graduate schools. Also prepares students for the many fields open to college graduates with a major in psychology. Aquinas offers the following concentrations within the major: scientific experimental psychology, personnel and organizational psychology, or human services. A Bachelor of Arts degree is received, with a major in psychology.

FIRST YEAR

First Semester	Second Semester
EN 100 or 1013	EN 1023
BI 1014	BI 1173
MA 1074	PY 2814
PY 2013	PS 1103
WE1	Humanities3
	WE1
15	17

SECOND YEAR

First Semester	Second Semester
Humanities3	Humanities3
Social Science3	Psychology3
Psychology3	Electives10
Electives6	
15	16

This program fulfills all requirements for an Associate in Arts degree. Students who earn the Associate in Arts degree will have fulfilled all the Liberal Education Degree requirements at Aquinas College. Upon transfer, they may pursue major course work and desired electives—with the exception of one course from the Religious Dimension of Human Existence category and a Global Perspective capstone course in your junior and senior years to total 124 credit hours and earn a Bachelor of Science with a major in psychology.

■ **Michigan State University**

■ **Western Michigan University**

SOCIAL WORK:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college

or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Grand Valley State University** (updated 12/02)

FIRST YEAR

First Semester	Second Semester
EN 100 or 1013	EN 1023
MA 1074	PL 2053
PS 1103	BI 1014
Humanities3	PY 2814
PY 2013	WE Activity1
16	15

SECOND YEAR

First Semester	Second Semester
WE Activity1	SO 2543
Humanities3	PY 2313
SO 2053	World perspective . . .3
EC 251 or 2523	SO 2603
Elective3	Elective3
SO 2513	
16	15

Notes:

1. Degree offered: B.S.W.
2. All social work majors must formally apply to the School of Social Work at the end of their sophomore year. Application materials must be completed and submitted by September 30 for winter admission.
3. To be eligible for consideration of candidacy, students must have: 1) completed all freshman and sophomore course requirements in the B.S.W. curriculum, 2) a minimum GPA of 2.0 and earned a minimum grade of 2.7 in selected courses, and 3) completed the application and process for candidacy for the B.S.W. degree.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

■ **Michigan State University**

■ **Western Michigan University**

SOCIOLOGY:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Aquinas College (updated 12/01)

To prepare students for graduate school or an immediate occupation. There are many positions in social service and health agencies and business, particularly in personnel and related areas, for which an undergraduate degree in sociology is desirable preparation.

FIRST YEAR	
First Semester	Second Semester
EN 100 or 1013	EN 1023
PS 1103	SO 2513
MA 1074	PY 2814
Science Lab4	Humanities3
Elective2	Elective3
	WE1
	16
	17
SECOND YEAR	
First Semester	Second Semester
PY 2013	Humanities3
SC 131 or 1353	SO 205 or 2703
Electives8	Electives10
	14
	16

This program fulfills all requirements for an Associate in Arts degree. Students who earn the Associate in Arts degree will have fulfilled the Liberal Education degree requirements at Aquinas College, and upon transfer, may pursue their major course work and desired electives, with the exception of one course from the Religious Dimension of Human Existence category and a Global Perspective capstone course in your junior and senior years to total 124 credit hours and earn a Bachelor of Arts with a major in Sociology.

■ Grand Valley State University (updated 12/02)

FIRST YEAR	
First Semester	Second Semester
EN 100 or 1013	EN 1023
MA 1074	Humanities3
PS 1103	Science Lab4
Humanities3	SO 2513
PY 2013	WE Activity1
	16
	14
SECOND YEAR	
First Semester	Second Semester
WE Activity1	World Perspectives . . .3
Humanities3	Electives7
SO 2543	SO 2913
Elective3	SO 2613
BA 254,	
MA 215, or PY 281 . .3/4	
SO 2603	
	16/17
	16

Note: Degrees offered: B.A., B.S. Students seeking the B.A. degree must demonstrate third semester proficiency in a foreign language.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

■ Western Michigan University

CRIMINAL JUSTICE



Human Services

GRCC Educational Choices:

Associate in Applied Arts and Sciences
Associate in Arts

Contact: Criminal Justice Department
(616) 234-4280

CORRECTIONS: (Code 152)

Suggested GRCC Program:

Associate in Applied Arts and Sciences or Associate in Arts

This program prepares students to serve as adult corrections officers in prisons and jails, counselors in halfway houses, and probation or parole officers. It also serves to enhance the skills of people already employed in correctional settings.

Corrections officers are charged with safekeeping of people who have been arrested, are awaiting trial, or who have been tried and convicted of a crime and are sentenced to serve time in a correctional institution. The Correctional Officer Training Act requires that certain specific college courses and academy training are necessary to certify individuals as correctional officers. Students are advised to discuss specific requirements with the GRCC Corrections Training Coordinator before enrolling.

Probation and parole officers work in community settings and with the courts in counseling and monitoring the activities of sentenced and paroled offenders. Most jurisdictions require a bachelor's degree as a condition of employment for parole and probation officer jobs. Students interested in such work should discuss transferability of Community College work to baccalaureate degree-granting institutions with the GRCC Corrections Training Coordinator before enrolling in the program.

The job outlook for corrections officers continues to be very favorable.

Students in Corrections may qualify for either the Associate in Applied Arts and Sciences degree or the Associate in Arts. Those who wish to earn the AA should make sure that they meet the communication, humanities, social science and natural science requirements for that degree.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Year

First Semester

Contact

		Credits	Hours
BA 101	Business and Technical English 1** OR	3	3
EN 100	College Writing ** OR	3	4
EN 101	English Composition 1 **	3	3
CJ 105	Introduction to Corrections #	3	3
CJ 115	Client Growth and Development #	3	3
CJ 140	Juvenile Delinquency	3	3
—	Natural Science Elective **	4	7
		<u>16</u>	

Second Semester

		Credits	Contact Hours
BA 102	Business and Technical English 2** OR	3	3
EN 102	English Composition 2 **	3	3
CJ 110	Introduction to Criminal Justice	3	3
CJ 145	Juvenile Corrections	3	3
CJ 281	Criminal Justice Internship 1 OR	3	3
CJ 285	Criminal Justice Practicum 1 OR	3	3
CJ 270	Issues in Corrections	3	3
WE 156	First Aid	1	2
SP/CJ 122	Spanish for Criminal Justice	3	3
		<u>16</u>	

Second Year

Third Semester

CJ 216	Client Relations in Corrections #	3	3
CJ 221	Correctional Institutions #	3	3
CJ 237	Legal Issues in Corrections #	3	3
CJ 245	Substance Abuse	3	3
CJ 282	Criminal Justice Internship 2 OR	3	3
CJ 286	Criminal Justice Practicum 2 OR	3	3
CJ 270	Issues in Corrections	3	3
WE 140	Personal Defense	1	2
		<u>16</u>	

Fourth Semester

CJ 243	Methods of Interviewing	3	3
CJ 246	Alcohol Use and Abuse	3	3
PS 110	Survey of American Government	3	3
—	Humanities Elective **	3/5	
—	Natural Science Elective **	4	7
		<u>16/18</u>	
Total Credits (for AAAS)		64	
(for AA)		66	

** Students matriculated for the Associate in Arts degree should take EN 100 or EN 101, and EN 102; BA 101 and BA 102 will not fulfill requirements for the AA. The AA degree also requires 8 credits of natural science (at least one course of which must include a laboratory) and 8 credits in humanities.

These courses meet the minimum academic program requirements mandated by the Michigan Correctional Officers Training Council (MCOTC) under Public Act 415.

CRIMINAL JUSTICE:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

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■ Grand Valley State University (updated 12/02)

FIRST YEAR

First Semester	Second Semester
EN 100 or 101 .....3	EN 102 .....3
MA 107 .....4	Humanities .....3
PS 110 .....3	CJ 235 .....3
CJ 110 .....3	World Perspectives ...3
Humanities .....3	Elective .....3
16	15

SECOND YEAR

First Semester	Second Semester
WE .....1	CJ 242 .....3
Humanities .....3	WE .....1
PY 201 .....3	Science Lab .....4
CJ 241 .....3	PY 281/MA 215 or
U. S. Diversity .....3	BA 254 .....3/4
Elective .....3	Elective .....3
16	14/15

Notes:

1. Degrees offered: B.A., B.S. Students seeking the B.A. degree are required to demonstrate third semester proficiency in a foreign language.
2. The School of Criminal Justice operates a state certified M.C.O.L.E.S. Police Academy during the summer months. The program leads to eligibility for police certification in Michigan and several other states, and it can be counted toward a major in criminal justice or general electives for graduation.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

■ Ferris State University (updated 12/02)

Grand Rapids Campus
www.ferris.edu/grandrapids

Big Rapids Campus

See *printable Transfer Guide* at:

www.ferris.edu/admissions/transfer/webpages/

For more information, contact:

Educational Counselor, Mary Cline
 Phone: (231) 591-3646
 e-mail: clinema@ferris.edu

■ Western Michigan University (updated 12/02)

The Criminal Justice program is for students who wish to complete a Bachelor's Degree in Criminal Justice preparatory to employment in law enforcement (both certification and administration), courts, corrections, juvenile justice, research, and as a basis for graduate study. The law enforcement certification is available the last two semesters at WMU with students receiving Bachelor's Degree credit for the academy courses.

Students who complete an Associate Degree in Corrections or Law Enforcement or Police Administration, are eligible to enroll at WMU in the Criminal Justice Curriculum in the College of Arts and Sciences. CJ classes recommended in second year.

FIRST YEAR

First Semester	Second Semester
EN 101 .....3	CJ 110 .....3
SO 251 .....3	MA 124 .....4
HS 249 or 250 .....3	HU 280 .....3
HU 270 .....4	PY 201 .....3
13	13

SECOND YEAR

First Semester	Second Semester
CJ 111 .....3	CJ 140 or 241 .....3
CJ 235 .....3	CJ 236 .....3
BI 101 .....4	PL 206 .....3
CO 110 .....3	BI 125 .....3
13	12

Students need both CI 235 and CI 236.

Students should satisfy the Liberal Education Curriculum Distribution Area requirements and their Academic Proficiency described under "Liberal Arts, WMU", and see LEC Guide. See a GRCC Counselor, MACRAO recommended.

LAW ENFORCEMENT: (Code 808)

Suggested GRCC Program:

Associate in Applied Arts and Sciences or Associate in Arts

The Law Enforcement program is a pre-service, "academy-type" program that prepares students to accept positions as qualified police officers.

An increasing number of police agencies in Michigan now require that an individual be "certified" prior to applying for a law enforcement position. "Certified" indicates that a person has completed the minimum basic training requirements and meets the minimum employment standards set forth by the Michigan Commission on Law Enforcement Standards (MCOLES). In order to be eligible for certification, students must contact the GRCC Coordinator of Criminal Justice during their first semester at the College.

The GRCC Coordinator of Criminal Justice has been authorized by the MCOLES to identify graduates of the two-year (associate degree) law enforcement program as certifiable. Employers do not need to send certifiable graduates to a police academy before they can perform duties.

Enrollment in the second semester of this program is restricted to students who meet certain requirements set forth by the MCOLES. Students must verify their eligibility for certification during the second semester with the Coordinator of Criminal Justice.

Students in Law Enforcement may qualify for either the Associate in Applied Arts and Sciences degree or the Associate in Arts. Those who wish to earn the AA should make sure that they meet the communications, humanities, social science and natural science requirements for that degree. Refer to the Group Distribution Requirements Associate in Arts degree in the front of the Catalog.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met. **Courses with MCOLES objectives must be taken within a two-year time period. Part-time students should not start courses with MCOLES objectives until they can complete all of them within two years. Students must complete the group of courses with MCOLES objectives and be graduated in the same semester.**

First Year

First Semester

		Credits	Contact Hours
BA 101	Business and Technical English 1** OR	3	3
EN 100	College Writing ** OR	3	4
EN 101	English Composition 1 **	3	3
CJ 110	Introduction to Criminal Justice	3	3
CJ 111	Criminology	3	3
SP/CJ 122	Spanish for Criminal Justice	3	3
— —	Natural Science Elective **	4	7
		<hr/>	
		16	

Second Semester

BA 102	Business and Technical English 1** OR	3	3
EN 102	English Composition 2 **	3	3
CJ 150	Introduction to Traffic #	3	3
CJ 235	Criminal Law #	3	3
CJ 253	Patrol Operations 1#	3	3
PS 110	Survey of American Government	3	3
		<hr/>	
		15	

Summer Session (Required)

CJ 151	Traffic Accident Investigation #	2	2
CJ 152	Police Driving Techniques #	2	2
CJ 175	Use of Firearms #	3	3
		<hr/>	
		7	

Second Year

Third Semester

		Credits	Contact Hours
CJ 165	Police Physical Training ##	2	4
CJ 236	Procedural Law #	3	3
CJ 241	Criminal Investigation 1 #	3	3
CJ 255	Advanced First Aid #	3	3
CJ 281	Criminal Justice Internship 1 OR	3	3
CJ 285	Criminal Justice Practicum 1	3	5
— —	Natural Science Elective **	4	
		<hr/>	
		18	

Fourth Semester

CJ 166	Police Defensive Tactics ##	2	4
CJ 242	Criminal Investigation 2 #	3	3
CJ 257	Patrol Operations 2 #	3	3
CJ 282	Criminal Justice Internship 2 OR	3	3
CJ 286	Criminal Justice Practicum 2	3	3
— —	Humanities Elective** (SC 135 recommended)	3	
		<hr/>	
		14	
Total Credits (AAAS Degree)		70	
(AA Degree)		73	

** Students matriculated for the Associate in Arts degree should take EN 100 or EN 101, and EN 102; BA 101 and BA 102 will not fulfill requirements for the AA. The AA degree also requires 8 credits of natural science (at least one course of which must include a laboratory) and 8 credits in humanities.

These Courses contain MCOLES objectives.

CJ 165 and CJ 166 fulfill the College's physical education graduation requirement. They also contain MCOLES objectives.

YOUTH SERVICES: (Code 153)

Suggested GRCC Program:

Associate in Applied Arts and Sciences or Associate in Arts

Youth services workers act as social work aides and child advocates, and may be employed in similar occupations involving children and adolescents in corrections or human services settings. They often work for the juvenile courts, halfway houses for youths, drug abuse centers and other agencies that help young people in trouble. Although most positions require only an associate degree, students should consult with the GRCC Youth Services program coordinator concerning degree requirements for specific jobs.

Students in Youth Services may qualify for either the Associate in Applied Arts and Sciences degree or the Associate in Arts. Those who wish to earn the AA should make sure that they meet the communication, humanities, social science and natural science requirements for that degree.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Year

First Semester

		Credits	Contact Hours
BA 101	Business and Technical English 1** OR	3	3
EN 100	College Writing ** OR	3	4
EN 101	English Composition 1 **	3	3
CJ 105	Introduction to Corrections	3	3
CJ 140	Juvenile Delinquency	3	3
PY 201	General Psychology	3	3
— —	Natural Science Elective **	4	7
		<hr/>	
		16	

continued—

Second Semester

BA 102	Business and Technical English 2**	OR	3	3
EN 102	English Composition 2 **		3	3
CJ 110	Introduction to Criminal Justice		3	3
CJ 111	Criminology	OR	3	3
CJ 115	Client Growth and Development		3	3
CJ 145	Juvenile Corrections		3	3
WE 156	First Aid		1	2
SP/CJ 122	Spanish for Criminal Justice		3	3
			<hr/>	<hr/>
			16	

Second Year**Third Semester**

CJ 221	Correctional Institutions		3	3
CJ 237	Legal Issues in Corrections		3	3
CJ 245	Substance Abuse		3	3
CJ 281	Criminal Justice Internship 1	OR	3	3
CJ 285	Criminal Justice Practicum 1		3	3
WE 140	Personal Defense		1	2
PY 234	Adolescent Psychology		3	3
			<hr/>	<hr/>
			16	

Fourth Semester

CJ 243	Methods of Interviewing		3	3
CJ 246	Alcohol Use and Abuse		3	3
PS 110	Survey of American Government		3	3
— —	Humanities Elective **		3/5	
— —	Natural Science Elective **		4	7
			<hr/>	<hr/>
			16/18	

Total Credits	(for AAAS)	64
	(for AA)	66

** Students matriculated for the Associate in Arts degree should take EN 100 or EN 101, and EN 102; BA 101 and BA 102 will not fulfill requirements for the AA. The AA degree also requires 8 credits of natural science (at least one course of which must include a laboratory) and 8 credits in humanities.

EDUCATION**Human Services****Education Studies at GRCC:**

- Child Development Associate Credential (CDA) Formal Training Hours
- Associate Degree in Child Development
- Associate Degree in Paraprofessional Education
- Pre-Elementary Education
- Pre-Secondary Education

Grand Rapids Community College offers a wide range of course studies including child development, paraprofessional education and pre-professional teacher education. The goal is to provide students with the best preparation to fill the employment opportunities of the future in the field of education. The programs and courses range from a two year workforce degree to preparing for transfer to a four year college/university. Students may work with transfer institutions to enter into their school of education or child and family studies programs. Once students have completed the community college pre-education curriculum. Special education opportunities are available at transfer institutions.

GRCC Educational Choices:**Associate in Arts****Associate in Applied Arts and Sciences**

**Contact: Child Development
(616) 234-3380**

CHILD DEVELOPMENT ASSOCIATE CREDENTIAL (CDA) FORMAL TRAINING HOURS: (Code 130)

Students may take the classes listed below to meet the formal training hours requirements for the Child Development Associate (CDA) credential. Eligibility for the CDA credential can be acquired by successfully completing a program of training, experience and assessment based on competencies defined by the Council for Early Childhood Professional Recognition. It is important to realize that only the Council for Early Childhood Professional Recognition can grant a CDA credential. Students must make their own arrangements for assessment through the Council when they have completed the requirements. This credential is designed for professionals already working in the field and requires completion of at least 480 hours of experience working with young children within the last five years. The following courses at GRCC meet the formal training hours requirements:

		Credits	Contact Hours
CD 118	Human Growth and Development	4	3/2
CD 119	Methods of Preschool Ed. (Preschool CDA) OR	4	3/3
CD 210	Infant/Toddler Development (I/T CDA)	4	3/2
CD 218	Preschool Management	3	3
CD 180	Cooperative Education	<hr/> 3	3
Total Credits:		14	

These courses can NOT be taken all at once as prerequisites for each one must be met. All of these courses fit within the Child Development AA or AAAS degree (CD 180 is accepted as a substitute for CD 280).

CHILD DEVELOPMENT: (Code 120)

Suggested GRCC Program:

Associate in Arts or Associate in Applied Arts and Sciences

Child Development is a field of study that prepares professionals to provide care and education for children from birth through age eight. Professionals in this field provide interactions and learning experiences that promote the young child's intellectual, social, emotional, and physical growth and development. The program prepares students to teach in and direct childcare centers, Head Start programs, part-day preschools, and serve as teacher aides pre-k to 3rd grade in public schools. This program involves students in a variety of hands-on lab experiences with infants, toddlers, preschoolers, school-age and special needs children at the GRCC Lab Preschool and other sites in the community.

Students in Child Development may qualify for either the Associate of Arts degree or the Associate in Applied Arts and Sciences degree. Those wishing to earn the AA degree should be sure to meet the communications, humanities, social science and natural science requirements for that degree.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

First Year

First Semester

		Credits	Contact Hours
EN 100	College Writing + OR		
EN 101	English Composition +	3	3
PS 110	Survey of American Government	3	3
CD 118	Human Growth and Development 1	4	3/2
CD 105	Foundations of Early Childhood Ed.	3	3
— —	Natural Science Elective	4	4
		<u>17</u>	

Second Semester

EN 102	English Composition 2 ±	3	3
CD 119	Methods in Pre-school Education #	4	3/3
EN 250	Children's Literature	4	4
CD 215	Adult-Child Interaction	3	3
PY 201	General Psychology	3	3
		<u>17</u>	

Second Year

Third Semester

CD 210	Infant and Toddler Development	4	5
CD 230	Young Children with Special Needs	4	5
CD 116	Families, Intimate Relationships, and Human Sexuality OR		
CD 260	Emergent Literacy	3	3
— —	Humanities Elective	4	4
		<u>15</u>	

Fourth Semester

CD 218	Pre-school Management	3	3
CD 280	Cooperative Education	3	15 hrs. work
CD 285	Assessment Tools in Child Development	2	2
WE 156	First Aid ++	1	1/1
WE 157	Elementary Games and Rhythms	1	1/1
— —	Natural Science Elective **	4	3/2-3
		<u>14</u>	
Total Credits		63	

* CH = Contact hours: The number of class hours of attendance required per week. A virgule (/) separates "lecture" hours (listed first) from "laboratory" hours.

** The AA Degree requires one natural science course to include a laboratory.

+ Students who have current Red Cross First Aid and Community CPR (Professional level preferred) certificates can provide proof to the Registrar's Office to meet this requirement.

++ Students choosing to complete an AAAS Degree may substitute BA 101 and 102 for the English classes and complete electives in place of some of the natural science and humanities credits as described in the Catalog. The AAAS degree does not meet the MACRAO agreement requirements and may not transfer as well to four-year institutions.

Transfer Opportunities:

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Ferris State University-Grand Rapids:

Elementary Teacher Certification with a ZA (Early Childhood Education) endorsement B.S.

■ Aquinas College:

Elementary Teacher Certification with a ZA (Early Childhood Education) endorsement B.S.

■ Davenport University:

Child Development/Business B.S.

continued—

FAMILY STUDIES:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Western Michigan University (WMU) (updated 12/02)

Grand Rapids Community College courses accepted by Western Michigan University for the Bachelor of Science in Family Studies with a Child Development emphasis:

Course

CD 105 Foundations of Early Childhood Education	3 cr.
CD 116 Family, Intimate Relationships, and Human Sexuality	FCS 210
CD 118 Human Growth and Development 1	FCS 214
CD 119 Methods in Preschool Education	4 cr.
CD 210 Infant and Toddler Development	FCS 314
CD 215 Adult-Child Interactions	3 cr.
CD 218 Preschool Management	3 cr.
CD 230 Young Children with Special Needs	4 cr.
CD 260 Emergent Literacy	3 cr.
CD 280 Cooperative Education	3 cr.
CD 285 Assessment Tools in Child Development	2 cr.
WE 157 Elementary Games and Rhythms	PEPR 340

This articulated program will allow a student to complete a Family Studies program with an emphasis in Child Development.

Note: The completion of this program will NOT lead to Michigan Department of Education teacher certification.

PARAPROFESSIONAL EDUCATION: (Code 420)

GRCC Educational Choices:

Associate in Arts

Associate in Applied Arts and Sciences

**Contact: Child Development
(616) 234-3380**

Suggested GRCC Program:

Associate in Arts or Associate in Applied Arts and Sciences

This program is designed to prepare students to work as paraprofessionals in K-8 classrooms and K-12 Special Needs classrooms. It is an Associate in Arts degree aimed at satisfying federal requirements for Title I programs. Courses are designed to build knowledge and skills related to human growth and development, the field of teaching, characteristics of learners, special education, instructional content and practice, the teaching and learning environment, behavior management, communication, diversity of families, health, safety and emergency procedures and professionalism and ethical standards. The majority of courses will also transfer into elementary teacher certification programs at four-year universities. Students should work closely with their advisor throughout the program to ensure transferability. Students working in Pre-K programs can either complete the Child Development program (Code 120) or follow this program and take two additional courses (CD 119 and CD 218) to complete the formal training hours required to obtain a CDA credential.

Students in Paraprofessional Education may qualify for either the Associate in Arts degree or the Associate in Applied Arts and Sciences degree. Those wishing to earn the AA degree should be sure to meet the communications, humanities, social science and natural science requirements for that degree.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met:

First Year

First Semester

		Credits	Contact Hours
EN 101	English Composition	3	3
CD 215	Adult-Child Interaction	3	3
CD 118	Human Growth and Development	4	5
PS 110	Survey of American Government	3	3
CO 101	Introduction to Computer Applications	2	2
		15	

Second Semester

EN 102	English Composition 2	3	3
ED 200	Introduction to Teaching OR		
CD 105	Foundations of Early Childhood Ed.	3	3
MA 107	Intermediate Algebra *	4	4
— —	Humanities Elective (Recommended SP 101 Introductory Spanish)	4	4
WE 157	Elementary Games and Rhythms	1	2
		15	

Second Year

Third Semester

EN 250	Children's Literature	4	4
CD 230	Young Children with Special Needs	4	5
— —	Social Science Elective	3	3
	<i>(Recommended HS 249 History of United States from Exploration through Reconstruction OR HS 250 U.S. History from End of Reconstruction to the Present)</i>		
MA 210	Mathematics for Elementary Teachers 1 OR		
MA 211	Mathematics for Elementary Teachers 2	4	4
WE 156	First Aid **	1	1/1
		16	

Fourth Semester

CD 260	Emergent Literacy	3	3
BI 101	General Biology OR		
PC 101	General Physical Science	4	4
CD 280	Cooperative Education in Child Dev.	3	3
CD 285	Assessment Tools in Child Development	2	2
PY 201	General Psychology	3	3
— —	Elective ***	1-2	
		16	
	Total Credits	62	

* Students who have completed 3 years of high school math and meet the prerequisite for MA 210 without needing MA 107 are recommended to take MA 210 and MA 211.

** Students possessing current Red Cross First Aid and CPR Certification can submit proof to the Registrar's Office to meet this requirement.

*** GRCC offers a variety of courses such as PY 251, MU 200, and AT 255 that are aimed at students transferring into Elementary Teacher Certification programs. Students wishing to transfer should work closely with counselors to choose electives.

TEACHER EDUCATION:

GRCC Educational Choices:

Associate in Arts

Associate in Applied Arts and Sciences

**Contact: Counseling Department
(616) 234-4130**

Suggested GRCC Program: Associate in Arts

A career in education demands a highly motivated individual dedicated to meeting the challenges presented in the real world of students, classrooms and schools. Students pursuing degrees in elementary, secondary or special education will be selecting majors and/or minors for their degrees. Specific program requirements vary from college to college, and will determine the courses taken in major and/or minor areas of study. It is critical for students to seek out this information as soon as possible to begin to work through the process of determining the best transfer school. All students pursuing teacher certification should plan to take the Michigan Test for Teacher Certification: Basic Skills (reading,

writing, mathematics) during the second semester of their freshman year. All colleges require successful completion of this test before acceptance into their respective schools of education. For information on test dates, registration and cost, contact the Teacher Education Office in Room 310 of the Main building.

GRCC has developed several articulation agreements/partnerships in Teacher Education with local colleges and universities. These agreements are designed to facilitate the transfer of credits from GRCC to their Schools of Education. Our main transfer institutions for teacher education are: Aquinas College, Central Michigan University, Ferris State University, Grand Valley State University, Michigan State University, and Western Michigan University.

Teacher education candidates are recommended to do the following while completing the GRCC admission and orientation process:

1. Go to the GRCC Counseling Office and meet with a counselor who can help design an individualized academic plan.
2. Make sure that an education curriculum code is designated. This will insure that pertinent information about the teaching profession provided through the GRCC Teacher Education is received.
3. Each four-year institution has unique requirements for entrance into their School/College of Education. Students should contact their transfer institution early in their freshman year to determine specific transfer requirements. Note that some transfer schools require a dual application process: one application for admission into the college/university, and a second application for admission into their school of education

PRE-ELEMENTARY EDUCATION: (Code 804)

Suggested GRCC Program: Associate in Arts

The curriculum for students planning to become elementary teachers varies considerably among transfer institutions. Please see an advisor for specific information pertaining to the courses to take while at GRCC. A sample program is suggested below.

A Sample Program for Pre-Professional Elementary Education Leading to an Associates Degree

Course

ENGLISH

EN 101	English Composition 1	3 cr.
EN 102	English Composition 2	3 cr.

continued—

HUMANITIES

SC 131 Introduction to Public Speaking OR	
SC 135 Interpersonal Communication	3 cr.
EN 250 Children's Literature	4 cr.
Elective: Select courses from Group I : Humanities	3 cr.

SOCIAL SCIENCE

PS 110 Survey of American Government.	3 cr.
PY 201 General Psychology.	3 cr.
PY 251 Educational Psychology.	3 cr.

SCIENCE

BI 101E Biology for Elementary Teaching	4 cr.
PC 101	4 cr.

MATHEMATICS

MA 107 Intermediate Algebra (or equivalent).	4 cr.
MA 210 Math for Elementary Teachers 1 *	4 cr.
MA 211 Math for Elementary Teachers 2 *	4 cr.
*Must have a C in Math 107 or High School Equivalent	

FITNESS/WELLNESS ACTIVITIES

WE 157 Elementary Games and Rhythms	1 cr.
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PROFESSIONAL CORE

CD 118 Human Growth and Development *	4 cr.
*Be sure to check with specific transfer institution to see if this course is accepted.	
*Preferably taken in freshman year.	

**Education 200 Introduction to Education.	3 cr.
**Be sure to check with specific transfer institution to see if this course is accepted.	
**Preferably taken in sophomore year.	

Additional Elective(s):	9 cr.
Possible considerations: GE101, SP101, MU200, AT 255	
Consult transfer institution to identify additional required courses.	

Total for Associates in Arts: 62 Credits
(MACRAO agreement is met)

It is the responsibility of all students to contact the college or university to which they wish to transfer in order to verify transfer credits. Each institution reserves the right to make changes in transfer requirements without prior notification. This is a guide of possible courses for your two years at GRCC.

All teacher education students are encouraged and welcome to attend the Teacher Education Seminars and all other events held monthly on our campus. The activities are posted in all school bulletins. For more information regarding any aspect of our program as well as to explore the scholarships available for future teachers, please stop by the Teacher Education Program office at 310 Main or call 234-3848.

PRE-SECONDARY EDUCATION: (Code 803)**Suggested GRCC Program: Associate in Arts**

Students seeking certification in secondary education or must follow the recommended course of study provided by the transfer institution. To become a state certified teacher in Michigan, a student must obtain a bachelor's degree, pass the Basic Skills Michigan Test for Teacher Certification, and before receiving their teaching certificate, pass the Michigan Content Test in their major and minor(s).

Not all colleges/universities offer every teachable major and minor. Students should check with their intended transfer institution to be sure that institution offers their desired major and minor. Also, most colleges of education have requirements for admission and completion of their teacher certification program that are unique to that institution.

Required Core courses by most transfer institutions:**ENGLISH**

EN 101 English Composition 1	3 cr.
EN 102 English Composition 2	3 cr.

HUMANITIES

SC 131 Introduction to Public Speaking OR	
SC 135 Interpersonal Communication	3 cr.
Electives: Music, Art, Language, Philosophy, Speech.	6 cr.

SOCIAL SCIENCE

PS 110 Survey of American Government.	3 cr.
PY 201 General Psychology	3 cr.
PY 251 Educational Psychology.	3 cr.

SCIENCE/MATH: (must have one lab science course)

Lab Science	4 cr.
MA 107 Intermediate Algebra	4 cr.

FITNESS/WELLNESS ACTIVITIES

WE 156 First Aid	1-2 cr.
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PROFESSIONAL CORE

CD 118 Human Growth and Development *	4 cr.
* Be sure to check with specific transfer institution to see if this course is accepted.	
* Preferably taken in freshman year.	

Education 200 Introduction to Education **	3 cr.
** Be sure to check with specific transfer institution to see if this course is accepted.	
** Preferably taken in sophomore year.	

Additional Elective(s):	22/23
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Students should consult with transfer institutions about specific courses at GRCC that will fulfill major and minor requirements.

It is the responsibility of all students to contact the college or university to which they wish to transfer in order to verify transfer credits. Each institution reserves the right to make changes in transfer requirements without prior notification. This is a guide of possible courses for your two years at GRCC.

All teacher education students are encouraged and welcome to attend the Teacher Education Seminars and all other events held monthly on our campus. The activities are posted in all school bulletins. For more information regarding any aspect of Teacher Education as well as to explore the scholarships available for future teachers, please stop by the Teacher Education Program office at 310 Main or call (616) 234-3848.

Technical Education Transfer Opportunities:

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Ferris State University** (updated 12/02)

Allied Health Education, B.S.

The Allied Health Education program prepares persons to teach in vocational schools, skill centers, community colleges, and health care institutions. Students can transfer an Associate degree in the following areas: Dental Assisting, Dental Hygiene, Dental Technology, Health Optics, Medical Assisting, Medical Lab Technology, Medical Records Technology, Nursing, Optometric Technology, Radiologic Technology, and Respiratory Therapy. Students have the option of obtaining a Vocational teaching certificate or Provisional teaching certificate.

Technical Education, B.S.

The Technical Education program prepares persons to teach in high schools, vocational programs, area skill centers, community colleges, and work in industry. Graduates earn a Bachelor's degree and may qualify for a Michigan Provisional Teaching Certificate and Temporary Vocational Authorization.

Admission to the program requires completion of an accredited Associate degree or documented competency in an occupational specialty through MOCAC.

Over 30 technical majors can be used in the degree. Some of the majors include:

- Air Conditioning, Refrigeration and Heating Technology
- Architectural Drafting Technology
- Automotive Technology
- Electronics Technology
- Tooling and Manufacturing Technology
- Industrial Maintenance Technology
- Mechanical Drafting/CAD Technology
- Plastics Manufacturing Technology
- Welding Technology

All courses to complete the Bachelor's degree can be completed while dually enrolled at Ferris State University-Grand Rapids, Applied Technology Center, and Grand Rapids Community College. For information, contact FSU-Grand Rapids in the ATC building, room 182, or call (616) 451-4777. Visit their website at www.ferris.edu/grandrapids. This degree program is also available on the main campus in Big Rapids.

■ **Western Michigan University**

The Occupational Education Studies (OES) Program is an articulated teacher education program planned, developed, and implemented in conjunction with Michigan Community Colleges to prepare certified teachers in Career and Technical Education (CTE) programs for comprehensive high schools, trade academies, and area technical centers within the State of Michigan. Articulation programs are in place for GRCC students. A complete list of guides and programs are available in the Counseling Office and on-line, follow Extended Learning Link: www.wmich.edu

HOSPITALITY



Human Services

GRCC Educational Choices:

Certificate

Associate in Applied Arts and Sciences

Contact: *Hospitality Education Department*
(616) 234-3690

BAKING AND

PASTRY ARTS: (Code 156)

Suggested GRCC Program: Certificate

The Baking and Pastry Arts certificate program is designed to prepare graduates for employment in retail deli-bakeries, pastry and bakery shops, commercial bakeries, and hotel and resort bakery and pastry kitchens.

Housed in the new GRCC baking and pastry facility, the hands-on laboratory courses include scratch and convenience baking, cake decoration, sugar and chocolate specialty work, and deli-bakery management. The program also includes classes in cost control, sanitation and personnel management. Students will take a combination of lecture and laboratory courses from professional chefs, bakers and pastry chefs who are experienced and degreed members of the Hospitality Education Department faculty. In addition to their course work at the college, students are required to complete a cooperative education work experience under the direct supervision of a professional baker or pastry chef.

Baking and Pastry Arts is designed to be a "Certificate of Completion" program. Graduates will be prepared to directly enter the workforce without the need for additional formal education. There are several associate degree granting programs in baking and/or pastries around the country with which this program may articulate. They include the Culinary Institute of America, Johnson and Wales, California Culinary Academy, and the National Center for Hospitality Studies.

The curriculum is designed to meet the accreditation requirements of both the Retail Bakers Association and that of the American Culinary Federation Accreditation Commission.

GRCC participates in the Kent Metropolitan Articulation Project (KMAP), which facilitates the articulation of course work from the high school to the community college. Presently, there are two required courses of the GRCC Baking and Pastry Arts program which may be articulated from the high school level.

First Semester

		Credits	Contact Hours
CA 104	Bakery	5	12.5
CA 111	Restaurant Sanitation and Safety	2	2
CA 124	Retail Baking	5	12.5
CA 140	Hospitality Forms and Formulas	4	4
CA 234	Hospitality Marketing	3	3
Actual hours in classroom per week— 34		19	

Second Semester

CA 135	Buttercream Cake Decorating Basics	2	2
CA 200	Hospitality Management	3	3
CA 201	Food Service Cost Controls and Financial Analysis	3	3
CA 204	Pastry	5	12.5
CA 224	Bakery/Deli Operations	5	12.5
Actual hours in classroom per week— 33		18	

Summer Session (Required)

CA 180	Cooperative Education in Culinary Arts (student must satisfy a minimum 240-hour work requirement)	3	3
		3	

Total Credits

40

CULINARY ARTS: (Code 151)

Suggested

GRCC Program: Associate in Applied Arts and Sciences

As a result of more people eating away from their homes and increased demand for institutional food service, the need for qualified cooks and chefs may become critical.

Job opportunities for trained cooks and chefs are expected to be very good in the years ahead.

Students in GRCC's Culinary Arts program take appropriate college courses and operate a public restaurant - "The Heritage" - located in the Applied Technology Center on the GRCC campus. They also gain practical experience in banquet service and catering.

Graduates of this program are prepared to accept jobs as cooks and chefs in fine restaurants, hotels, motels, resorts and institutions. The work is demanding, often requiring long hours at odd times, but the rewards are there. Promotions are often rapid and salaries are often high for capable and energetic workers.

The Culinary Arts program - like the industry itself - demands dedication and hard work. It requires about 35 hours of class time per week, and students are not encouraged to work at outside jobs while attending school. Students in Culinary Arts are expected to provide their own uniforms and knife sets.

New students may enter the Culinary Arts program in either August or January of any year.

This program is articulated with baccalaureate programs at Ferris State University and Grand Valley State University. Ferris State University, however, imposes special requirements for courses taken at GRCC. **Students interested in transferring to either of these colleges following completion of their work at GRCC should consult the Program Director before selecting courses for their first semester at GRCC.** Some advanced standing credit may be available to graduates of high school programs in food service that are members of the Kent Metropolitan Articulation Project. The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

Culinary Arts students receive extensive practical training in all aspects of commercial food preparation and presentation. The program includes laboratory courses in dining room service, baking and patisserie, catering and banquet organization, classical and American regional cookery, and restaurant operations. The curriculum also includes lecture courses in nutrition, sanitation, purchasing, and personnel management.

First Year

First Semester

		Contact Credits	Hours
CA 104	Bakery	5	12.5
CA 105	Skill Development	5	12.5
CA 111	Restaurant Sanitation and Safety	2	2
CA 209	Principles of Food Preparation	3	3
CA 212	Food Purchasing	2	2
Actual hours in classroom per week— 32		17	

Second Semester

CA 102	Introduction to the Hospitality Industry	2	2
CA 112	Menu Planning and Nutrition	3	3
CA 114	Food Production	5	12.5
CA 115	Table Service	5	12.5
EN 100	College Writing OR	3	3
EN 101	English Composition 1 OR		
BA 101	Business and Technical English 1		
Actual hours in classroom per week— 33		18	

Summer Session (Required)

CA 180	Cooperative Education in Culinary Arts (student must satisfy a minimum 240-hour work requirement)	3	3
		3	

Second Year

Third Semester

CA 204	Pastry	5	12.5
CA 205	Banquets and Catering	5	12.5
EN 102	English Composition 2 OR	3	3
BA 102	Business and Technical English 2		
PS 110	Survey of American Government	3	3
WE 156	First Aid	1	2
Actual hours in classroom per week— 33		17	

Fourth Semester

CA 140	Hospitality Forms and Formulas	4	4
CA 200	Hospitality Management	3	3
CA 244	Advanced Food Production	5	12.5
CA 245	Advanced Table Service	5	12.5
Actual hours in classroom per week— 34		17	

Total Credits	72
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Transfer Opportunities:

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Grand Valley State University

CULINARY MANAGEMENT: (Code 155)

Suggested

GRCC Program: Associate in Applied Arts and Sciences

Culinary Management students receive the same hands-on culinary training as Culinary Arts students, with an added focus on business issues. Beyond commercial cooking and dining room service, students develop valuable skills in marketing, personnel management, computer applications and financial analysis. Culinary Management graduates are in high demand, meeting the increasing need for qualified kitchen and restaurant managers.

This program is articulated with baccalaureate programs at Ferris State University and Grand Valley State University. Ferris State University, however, imposes special requirements for courses taken at GRCC. **Students interested in transferring to either of these colleges following completion of their work at GRCC should consult the Program Director before selecting courses for their first semester at GRCC.** Some advanced standing credit may be available to graduates of high school programs in food service that are members of the Kent Metropolitan Articulation Project. The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

continued—

First Year**First Semester**

		Credits	Contact Hours
CA 102	Introduction to the Hospitality Industry	2	2
CA 105	Skill Development	5	12.5
CA 111	Restaurant Sanitation and Safety	2	2
CA 124	Retail Baking	5	12.5
CA 140	Hospitality Forms and Formulas	4	4
Actual hours in classroom per week— 33		18	

Second Semester

CA 112	Menu Planning and Nutrition	3	3
CA 209	Principles of Food Preparation	3	3
CA 211	Food Purchasing	2	2
CA 224	Bakery/Deli Operations	5	12.5
EN 101	English Composition 1 OR	3	3
BA 101	Business and Technical English 1		
WE 156	First Aid	1	2
		17	

Actual hours in classroom per week— 38/8 weeks
18/8 weeks

Summer Session (Required)

CA 180	Cooperative Education in Culinary Arts (student must satisfy a minimum 240-hour work requirement)	3	3
		3	

Second Year**Third Semester**

CA 114	Food Production OR	5	12.5
CA 115	Table Service		
CA 234	Hospitality Marketing	3	3
CA 235	Beverage Management OR	2	2
CA 151	Introduction to Wine		
BA 207	Business Law 1	3	3
CO 101	Introduction to Computer Applications	2	2
EN 102	English Composition 2 OR	3	3
BA 102	Business and Technical English 2		
		18	

Actual hours in classroom per week— 36/8 weeks
15/8 weeks

Fourth Semester

		Credits	Contact Hours
CA 200	Hospitality Management	3	3
CA 201	Food Service Cost Controls and Financial Analysis	3	3
CA 205	Banquet and Catering OR	5	12.5
CA 244	Advanced Food Production OR		
CA 245	Advanced Table Service		
CA 238	Computer Applications in Food Service	2	2
PS 110	Survey of American Government	3	3
		16	

Actual hours in classroom per week— 38/8 weeks
13/8 weeks

Total Credits **72**

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Grand Valley State University**HOTEL MANAGEMENT:****Transfer Opportunities:**

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Ferris State University (updated 12/02)**Big Rapids Campus**

See printable Transfer Guide at:

www.ferris.edu/admissions/transfer/webpages/

For more information, contact:

Educational Counselor, Rebecca Kowalkoski

Phone: (231) 591-2420

e-mail: kowalkob@ferris.edu

SOCIAL SCIENCES



Human Services

GRCC Educational Choices:

Associate in Arts (MACRAO Agreement)

Contact: *Counseling Department*
(616) 234-4130

ECONOMICS:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ **Grand Valley State University** (updated 12/02)

FIRST YEAR

First Semester	Second Semester
EN 100 or 101 .....3	EN 102 .....3
MA 107 .....4	Humanities .....3
PS 110 .....3	EC 252 .....3
EC 251 .....3	WE .....1
Humanities .....3	Science Lab .....4
	Elective .....3
16	17

SECOND YEAR

First Semester	Second Semester
WE .....1	World Perspectives ...3
PL 202 .....3	U. S. Diversity .....3
BA 254,	Electives .....6
MA 215, or PY 281 ..3/4	
Elective .....3	PS 200 .....3
HS 249 or 250 .....3	
PS 202 .....3	
16/17	15

Note: Degrees offered: B.A., B.S. Students seeking the B.A. degree are required to demonstrate third semester proficiency in a foreign language. For additional information, please call the Seidman Undergraduate School services office at (616) 336-7500.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

■ **Western Michigan University**

HISTORY:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

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■ **Grand Valley State University** (updated 12/02)

FIRST YEAR

First Semester	Second Semester
EN 100 or 101 .....3	EN 102 .....3
Humanities .....3	Humanities .....3
PS 110 .....3	HS 102 .....4
MA 107 .....4	WE Activity .....1
HS 101 .....4	World Perspectives ...3
17	14

continued—

SECOND YEAR

First Semester		Second Semester	
WE Activity . . . . .	.1	U. S. Diversity . . . . .	.3
HS 249 . . . . .	.3	HS 250 . . . . .	.3
Humanities . . . . .	.3	Electives . . . . .	.8
Science Lab . . . . .	.4	HS 295 . . . . .	.3
HS 260 . . . . .	.3		
	14		17

Note: Degrees offered: B.A., B.S. Students seeking the B.A. degree should take three semesters of a foreign language. Students seeking the B.S. degree should take MA 215 and CO 110.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

- Aquinas College
- Michigan State University
- Western Michigan University

INTERNATIONAL RELATIONS:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

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- Grand Valley State University (updated 12/02)

FIRST YEAR

First Semester		Second Semester	
EN 100 or 101 . . . . .	.3	EN 102 . . . . .	.3
Foreign Lang. 101 . . . . .	.4	Foreign Lang. . . . .	.4
PS 110 . . . . .	.3	EC 252 . . . . .	.3
MA 107 . . . . .	.4	WE Activity . . . . .	.1
EC 251 . . . . .	.3	GE 135 . . . . .	.3
		PS 202 . . . . .	.3
	17		17

SECOND YEAR

First Semester		Second Semester	
WE Activity . . . . .	.1	U. S. Diversity . . . . .	.3
Foreign Lang. 231 . . . . .	.4	HS 250 . . . . .	.3
HS 249 . . . . .	.3	PS 215 . . . . .	.3
Science Lab . . . . .	.4	Electives . . . . .	.6
Humanities . . . . .	.3		
	15		15

Note: Degree offered: B.A.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill U.S. Diversity electives.

POLITICAL SCIENCE:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

- Grand Valley State University (updated 12/02)

FIRST YEAR

First Semester		Second Semester	
EN 100 or 101 . . . . .	.3	EN 102 . . . . .	.3
MA 107 . . . . .	.4	BA 254,	
PS 110 . . . . .	.3	MA 215, or PY 281 .3/4	
Humanities . . . . .	.3	Humanities . . . . .	.3
WE Activity . . . . .	.1	PS 200 . . . . .	.3
		WE Activity . . . . .	.1
		World Perspectives . . .	.3
	14		16/17

SECOND YEAR

First Semester	Second Semester
Electives .....9	PS 202 .....3
Humanities .....3	Electives .....6
U. S. Diversity .....3	Science Lab .....4
	PS 215 .....3
15	16

Note: Degree offered: B.A., B.S. Students seeking the B.A. degree must demonstrate third-semester proficiency in a foreign language.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

- Michigan State University
- Western Michigan University

PUBLIC ADMINISTRATION:

Transfer Opportunities:

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- Grand Valley State University (updated 12/02)

FIRST YEAR

First Semester	Second Semester
EN 100 or 101 .....3	EN 102 .....3
PS 110 .....3	Humanities .....3
Humanities .....3	Science Lab .....4
MA 107 .....4	EC 251 .....3
World Perspective ....3	WE .....1
16	14

SECOND YEAR

First Semester	Second Semester
WE .....1	BA 257 .....4
Humanities .....3	CO 110 .....3
EC 252 .....3	U. S. Diversity .....3
BA 256 .....4	BA 254,
Elective .....5	MA 215, or PY 281 ..3
	Elective .....3
16	16

Note: Degrees offered: B.A., B.S. Students seeking the B.A. degree must demonstrate third semester proficiency in a foreign language.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.



Natural Resources and Agriscience

Natural Resources and Agriscience

Are you a nature lover? Are you curious about the physical world and interested in plants and animals? Do you enjoy hunting or fishing? Do you like to garden or mow the lawn? Are you interested in protecting the environment?

This program of study relates to natural resources, agriculture, and the environment. Fish and game wardens, marine biologists, and farmers are careers in this path. You may be fond of outdoor activities, have a strong interest in living organisms, and express the following personality qualities are:

- ◆ Endurance
- ◆ Independence
- ◆ Organization
- ◆ Rational/logical
- ◆ Physical stamina
- ◆ Aptitude for science
- ◆ Analytical and abstract
- ◆ Critical thinking

Careers related to natural resources, agriculture, and the environment.

- ◆ Astronomer
- ◆ Meteorologist
- ◆ Landscape Architect
- ◆ Food Scientist
- ◆ Toxicologists
- ◆ Game Warden
- ◆ Geologist
- ◆ Farmer
- ◆ Vocational Agriculture
- ◆ Veterinarian
- ◆ Grounds Keeper
- ◆ Zoologist
- ◆ Biochemist
- ◆ Chemist
- ◆ Horticulture Worker
- ◆ Surveyor
- ◆ Marine Biologist
- ◆ Florist
- ◆ Greenhouse Technician

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BIOLOGY



Natural Resources and Agriculture

GRCC Educational Choices:

Associate in Arts (MACRAO Agreement)

Associate in Science (MACRAO Agreement)

**Contact: Counseling Department
(616) 234-4130**

BIOLOGY:

Transfer Opportunities:

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■ Grand Valley State University (updated 12/02)

FIRST YEAR

First Semester	Second Semester
EN 100 or 1013	EN 1023
MA 1074	CM 104 or 1144
CM 103 or 1134	BI 1044
BI 1034	PS 1103
	Humanities3
15	17

SECOND YEAR

First Semester	Second Semester
WE Activity1	WE Activity1
Humanities/Soc. Sci. . . .3	Humanities/Soc. Sci. . .3
World Perspectives3	U.S. Diversity3
CM 2314	CM 2414
MA 2154	BI 127 or 2074
15	15

Notes:

1. Degrees offered: B.A., B.S. Students seeking the B.A. degree must demonstrate third semester proficiency in a foreign language.
2. Beginning Fall 2003, there will be a new two-semester biology major sequence for GRCC students.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

■ Hope College

■ Western Michigan University

BIOTECHNOLOGY:

Transfer Opportunities:

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Ferris State University (FSU) (updated 12/02)

Big Rapids Campus

See *printable Transfer Guide* at:

www.ferris.edu/admissions/transfer/webpages/

For more information, contact:

Educational Counselor, Richard Kowalkoski
Phone: (231) 591-3661
e-mail: kowalkor@ferris.edu

DIETETICS:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

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■ Western Michigan University (updated 12/02)

See GRCC/Western Michigan University (WMU) General Education Transfer Guide for General Education courses and proficiency requirements.

A grade of "C" or better must be earned in all of the following courses:

GRCC Course* WMU Equivalent

BI 101 General Biology	BIOS 112
BI 121/122 Human Anatomy	
and Physiology 1 and 2	BIOS 240
BI 127 General Microbiology	BIOS 232
BA 270 Marketing	MKTG 250
CA 209 Principles of Food Prep.	FCS 165
CM 103 General Chemistry 1	CHEM 110/111
CM 104 General Chemistry 2	CHEM 112/113
CM 231 Organic Chemistry	CHEM 370 and 371
CM 241 Biological Chemistry	CHEM CR
CO 110 Intro. Comp. Info. Sys.	FCS 225
CA 250 Nutrition	FCS CR
EN 100 or 101	Writing Requirement
MA 107 Algebra	MATH 111
MA 110, 124, 127, 129, 133, 210, 215 (any)	Math Requirement
PL 206	PHIL 334
PY 201 General Psychology	PSY 100
SC 135 Interpersonal Comm.	COM 170
SO 251 Principles of Sociology	SOC 200

Humanities: 3 credits required, choose from GRCC or WMU General Ed transfer guide.

* These course substitutions are acceptable for this curriculum only. It cannot be assumed that these substitutions will be applicable in other curricula.

Notes:

1. MA 107 is required for Dietetics. Any other MA listed satisfies WMU college-level math.
2. EN 100, 101 or 102 is required by WMU.

CHEMISTRY



Natural Resources and Agriculture

GRCC Educational Choices:

Associate in Applied Arts and Sciences
Associate in Arts (MACRAO Agreement)
Associate in Science (MACRAO Agreement)

Contact: Chemistry Department
(616) 234-4219

CHEMICAL TECHNOLOGY: (Code 651)

Suggested

GRCC Program: Associate in Applied Arts and Sciences

The Chemical Technology program prepares students to work in chemical industries. Chemical technicians, whether they specialize in chemistry, polymers, or biochemistry, are valuable members of research, development, and production teams. A majority of chemical technicians are involved in laboratory work such as product development, chemical and physical testing, and analysis. Technicians may design and implement experiments as well as operate and maintain laboratory equipment and perform analytical procedures. Typically, the results of their work must be analyzed, interpreted and reported to lead scientists. Those technicians working outside the lab may supervise production processes, install pilot plants, and monitor the development of products and processes through scale-up from laboratory to production. Technical sales, writing and advertising are other areas of employment open to chemical technicians.

This program in chemical technology provides high quality training for students preparing to work in independent or government laboratories or in firms engaged in the development, production, sale, or use of chemical products. Laboratories involved in environmental issues are an increasingly important source of jobs in the field of chemical technology. Chemical technologists may also have the opportunity to work in the exciting and burgeoning biomedical laboratories in the area.

Students in Chemical Technology may qualify for either the Associate in Applied Arts and Sciences degree or the Associate in Science degree. Those students who want an Associate in Science degree should be sure to meet the humanities and social science requirements for that degree.

continued—

The following scheme is presented as a guide only. Students are expected to confer with a Chemical Technology program advisor in order to base their choices on their own goals and the strength of their previous college experience.

PROPOSED SCHEDULE OF COURSES:

First Year

First Semester		Credits	Contact Hours
CM 102	Introduction to Chemical Technology	1	1
CM 103	General Chemistry 1	4	7
CO 101	Introduction to Computer Applications	2	2
EN 101	English Composition 1	3	3
MA 131	Precalculus	5	5
		<hr/>	
		15	

Second Semester

CM 104	General Chemistry 2	4	7
EN 102	English Composition 2	3	3
WE —	Wellness Elective	1	2
PH 118	Physics for Chemical Technicians	4	6
PS 110	Survey of American Government	3	3
		<hr/>	
		15	

Third Semester

A summer internship (employment) at a local chemical industry is strongly encouraged, as well as:

Second Year

Fourth Semester

Fourth Semester		Credits	Contact Hours
CM 212	Quantitative Chemical Analysis	5	9
CM 236	Organic Chemistry 1	4	4
CM 237	Organic Chemistry Lab 1	1	4
SC 131	Fundamentals of Public Speaking	3	3
— —	Elective	3/4	
		<hr/>	
		16/17	

Fifth Semester

CM 238	Organic Chemistry 2	4	4
CM 239	Organic Chemistry Lab 2	1	4
CM 282	Instrumental Analysis	5	9
CM —	Chemistry Elective	3/4	
EN 249	Technical Writing	3	3
		<hr/>	
		16/17	

Electives for Chemistry

CM 241	Biochemistry	4	5.5
CM 252	Polymer Chemistry	3	4

Suggested Non-Chemistry Electives

BI —	Most Biology courses	3/4	
CO —	Most Computer Applications courses	2/4	
BA 103	Introduction to Business	4	4
EC 251	Principles of Economics 1	3	3
EC 252	Principles of Economics 2	3	3

Total Credits **62/65**

CHEMISTRY:

Transfer Opportunities:

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■ Grand Valley State University (updated 12/02)

FIRST YEAR

First Semester	Second Semester
EN 100 or 101 3	EN 102 3
CM 103 or 113 4	CM 104 or 114 4
PS 110 3	World Perspectives . . . 3
MA 133 5	MA 134 5
WE 1	
<hr/>	
16	15

SECOND YEAR

First Semester	Second Semester
CM 266 5	CM 267 5
PH 245 5	PH 246 5
U.S. Diversity 3	Humanities/Soc. Sci. . 3
Humanities 3	Humanities/Soc. Sci. . 3
WE 1	
<hr/>	
17	16

Notes:

- Degrees offered: B.S., B.A. Students seeking the B.A. degree are required to demonstrate third semester proficiency in a foreign language.
- Students may need to enroll in MA 131 prior to MA 133.
- Accreditation: Committee on Professional Training of the American Chemical Society.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

- Aquinas College
- Michigan State University

MORTUARY SCIENCE:

Transfer Opportunities:

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■ Wayne State University (updated 12/02)

FIRST YEAR

First Semester	Second Semester
EN 101 .....3	EN 102 .....3
CM 103 .....4	CM 104 .....4
SC 131 .....3	BI 103 .....4
BA 256 .....4	BA 257 .....4
CO 110 .....3	WE .....1
17	16

SECOND YEAR

First Semester	Second Semester
PY 201 .....3	HS 101 .....4
PL 202 .....3	PL 205 .....3
BI 104 .....4	Vis./Perform. Arts* ..3
SO 291 .....3	PS 110 .....3
WE .....1	SO 261 .....3
14	16

* One course from the following will fulfill Wayne State's Visual and Performing Arts requirement:
AT 105, MU 107 or 233, TH 248, HU 270 or 273.

Additional University general education requirements and the professional course requirements of Mortuary Science must be fulfilled at Wayne State.

Note: This information is not based on requirements for the Associate's degree. For all programs at Wayne State, not more than 64 semester hours from 2-year schools will apply.

NATURAL RESOURCES



Natural Resources and Agriculture

GRCC Educational Choices:

Associate in Arts (MACRAO Agreement)

**Contact: Counseling Department
(616) 234-4130**

CROP AND SOIL SCIENCE:

Transfer Opportunities:

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■ Michigan State University (updated 12/02)

This curriculum provides preparation for positions in Agronomy, Crop Science, Soil Science, and Turfgrass. This program prepares the student for many opportunities in the Agricultural industry.

Practical work experience in Crop and Soil related areas is extremely important. High school preparation recommended. College preparation curriculum should include mathematics through trigonometry, chemistry and biology.

continued—

Crop and Soil Sciences - cont.**FIRST YEAR**

First Semester	Second Semester
EN 100 or 101 .....3	EN 102 .....3
CM 103 or 113 .....4	MA 110 .....4
EN 233, 235, 261, 262;	CM 104 or 114 .....4
PL 201, 202 or 205 ....3	HS 249 or 250 .....3
Social Science .....3	
WE .....1	
14	14

SECOND YEAR

First Semester	Second Semester
BI 103 .....4	Humanities .....3
GL 101 .....4	BI 127 .....4
Humanities .....3	PS 110 .....3
EC 251 or 252 .....3	CM 231 .....4
CO 101 and 102, CO 110	Elective .....3
or CO 116 .....3-4	
17-18	17

Notes:

1. CM 113 and 114 may be substituted for CM 103 and 104.
2. See a GRCC counselor.

For more information, contact:

Susan DeRosa
(517) 355-0234
derosa@msu.edu

ENVIRONMENTAL STUDIES:**Transfer Opportunities:**

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

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■ Western Michigan University (updated 12/02)

Students are provided with a variety of intellectual experiences designed to provoke thought about the relationship of humans to the natural environment. Job possibilities include consultant work, governmental advisory jobs, and various other jobs related to the environment. In addition to the EVS Program, students are required to select another disciplinary major which strengthens their environmental program.

High school preparation recommended: college preparatory curriculum.

Because of the unique characteristics of the Environmental Program at WMU, students should complete the MACRAO agreement while at GRCC.

Students should begin their second major while at GRCC.

FISHERIES AND WILDLIFE:**Transfer Opportunities:**

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Michigan State University (updated 12/02)**FIRST YEAR**

First Semester	Second Semester
EN 100 or 101 .....3	EN 102 .....3
CM 103 or 113 .....4	MA 110 .....4
BI 103 .....4	Social Science (PS
MA 108 .....2	110, SO 251, PY 201,
	AN 201, etc.) .....3
	BI 104 .....4
13	14

SECOND YEAR

First Semester	Second Semester
MA 129 .....5	HS 249 or 250 .....3
Humanities (PL 201, PL 202, EN 233 EN 235, etc.) .....3/4	CM 231 .....4
PH 125 .....4	EC 251 or 252 .....3
Elective .....3	Elective .....3
15/16	13

Elective courses can be anything. Courses that don't count for specific FW courses satisfy our electives. Two potential elective courses that satisfy FW requirements could be BI 207 or BI 232.

Note: See a GRCC counselor.

For more information, contact:

Jim Schnieder, Academic Advisor
Michigan State University
40 Natural Resources
East Lansing, MI 48824
(517) 353-9091
schne181@msu.edu
www.fw.msu.edu

■ Lake Superior State University

FORESTRY:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

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■ Michigan State University (updated 12/02)

FIRST YEAR	
First Semester	Second Semester
CM 113 or 103 .....4	BI 104 .....4
EN 100 or 101 .....3	EN 102 .....3
AT 105 .....3	MA 110 .....4
WE .....1	CM 104 or 114 .....4
BI 103 .....3	
15	15

SECOND YEAR

First Semester	Second Semester
EC 251 .....3	CM 231 .....4
PH 125 (2) .....4	PS 110 .....3
Humanities .....3	Humanities .....3
HS 249 or 250 .....3	Social Science .....6
Elective .....4	
17	16

Note: See a GRCC counselor.

For more information, contact:

Agriculture and Natural Resources
Department of Forestry
126 Natural Resources
Michigan State University
East Lansing, MI 48824
(517) 355-0091

■ Michigan Technological University (updated 12/99)

A curriculum for students who are seeking positions as forest and land managers, park and recreation specialists, game area managers, municipal foresters, and forest scientists. High school preparation recommended: college preparatory curriculum; math through trigonometry; chemistry.

FIRST YEAR	
First Semester	Second Semester
EN 101 .....3	EN 102 .....3
CM 103 or 113 .....4	BI 103 .....4
MA 129 or 133 .....5	PH 125 or 245 .....4-5
PS 110 .....3	MA 215 .....4
Hum./Soc. Sci. ....3	Hum./Soc. Sci. ....3
18	18-19

Note: It is recommended that the pre-forestry student transfer to Michigan Technological University after completing one year at GRCC. If the student wishes to remain at GRCC for two years, it is suggested that the student contact the Admissions Office at Michigan Technological University in order to build a satisfactory schedule for the second year.

NATURAL RESOURCE MANAGEMENT:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Grand Valley State University (updated 12/02)

FIRST YEAR

First Semester

EN 100 or 1013
 MA 110 or 1315
 BI 1034
 GL 1014
 WE Activity1

16/17

Second Semester

EN 1023
 Humanities3
 PS 1103
 BI 1044
 WE Activity1
 MA 215,
 BA 254, or PY 281 ..3/4

17/18

SECOND YEAR

First Semester

Humanities/Soc. Sci. . . .3
 World Perspectives . . .3
 CM 1034
 CO 1103
 MA 1082

15

Second Semester

Humanities/Soc. Sci. .3
 U. S. Diversity3
 BI 207 or GL 104 . .3/4
 CM 1044
 Elective3

16/17

Note: Degree offered: B.S.

It is strongly recommended that students see the GRCC Counseling Office for a list of courses that will fulfill World Perspectives and U.S. Diversity electives.

WATER ENVIRONMENTAL TECHNOLOGY:

Transfer Opportunities:

Following are examples of transfer guides, sometimes called curriculums or courses of study. A transfer guide is a plan for completing a list of classes whose credits total 62 or more. These classes are to be taken at GRCC and will transfer to the college or university listed on the curriculum and also satisfy a portion of the bachelor degree.

Completion of most GRCC curriculums results in earning an Associate Degree of Arts or Sciences. Generally, transfer curriculums are formatted so that classes are grouped into 4 semesters spaced over 2 years. Classes do not necessarily need to be taken in the order in which they appear in the curriculum nor do they need to be completed in the time period indicated, i.e. 4 semesters. Before selecting and registering for any classes, please read course descriptions noting prerequisites. It is very important for students to know that the curriculums listed in this section of the catalog are examples of the more commonly selected courses of study at GRCC. Many other colleges and universities throughout Michigan offer programs in the career paths listed in this catalog. Please check with the Counseling Department for more options.

■ Delta College (updated 12/02)

An Associate degree in Applied Science in Water Environment Technology (WET) through Delta College is being offered at GRCC. Students will take their general education courses at GRCC and the WET courses through Delta College. Completion of the program will allow graduates the opportunity to write the entry-level water and waste water certification examinations administered by the Michigan Department of Environmental Quality.

GRCC Course Equivalents Delta College

BI 101 General Biology or
 BI 111 Great Lakes Ecology Systems BIO 110
 CM 103 General Chemistry I CHM 111
 CM 104 General Chemistry II. CHM 112
 CO 101 Introduction to Comp. Appl. CST 133
 EN 101 English Composition I. ENG 111
 EN 102 English Composition II ENG 112
 WE Wellness I Ed. (2) 2 LW Elective
 MA 107 Intermediate Algebra. MTH 119
 PS 110 Survey of American Gov. POL 103

Technical Courses Delta College
 WET 110 Water Treatment Technologies 3
 WET 112 Waste Water Treatment Technologies 3
 WET 221 Water Chemistry I 4
 WET 212 Advanced Water Treatment Tech. 4
 WET 220 Water Microbiology 4
 WET 230 Water/Waste Utility Management 3
 WET 240 Applied Hydraulics 3
 WET 244 Water/Waste Water Utility Equip. Main. . . 3
 WET 246 Water/Waste Water Utility Elect. Main. . . 3
 WET 265 Practicum in Water/Waste Water Trmnt . . 4
Total Credits 34

Note: The WET courses will be taught at the Wyoming Clean Water Plant in the City of Wyoming, MI.

For more information, contact:

Ron Sharp
 (517) 686-9071
 rlsharp@alpha.delta.edu

WATER PURIFICATION TECHNOLOGY: (Code 650)

Suggested GRCC Program:

Associate in Applied Science

This program is operated in cooperation with Bay Community College, Escanaba, Michigan. The Associate in Applied Science Degree is awarded by Bay Community College.

Students in Water Purification Technology take their first year of college classes at GRCC and their second year at Bay Community College in Escanaba, Michigan. (The second half of the last semester, however, is spent at a cooperative education work site as close to the student's home as practical.)

Increasingly stringent regulations on water quality and treatment have increased the need for trained technicians in this field. Water and wastewater treatment operators control processes and equipment for removing solid materials, chemicals, and organisms from the water or for rendering them harmless. By operating and maintaining the pumps, pipes, valves, and processing equipment of the treatment facility, operators move the water through the various treatment processes.

Operators read and interpret meters and gauges to make sure plant equipment and processes are working properly, and they adjust controls as needed. They operate chemical feeding devices, take samples and perform chemical and biological analysis, and test and adjust the level of chlorine in the water.

Graduates of this program have gone to work in municipal and industrial treatment plants, engineering firms, laboratories, hazardous waste treatment facilities, regulatory agencies and related facilities. Upon completion of this degree, students are eligible for immediate state operator certification in municipal water and wastewater treatment plants; they can then progress to the highest level of certification without any further educational requirements.

Bay Community College can make on-campus apartment housing available for students. Housing is also available in the town of Escanaba. More information on housing can be obtained from Bay's Housing Director at (906) 786-5802, Ext.179.

Students should file applications for admission with both Bay Community College and GRCC before the start of the freshman year. Application materials and additional information can be obtained from the Student Services Department at Bay Community College, telephone, (906) 786-5802, Ext. 148.

Upon acceptance by Bay, a place in the sophomore Water Purification Technology class will be reserved for the new student so that he/she is guaranteed a place in the second year of the program. The only entrance requirement is high school graduation (or GED). High school transcripts, as well as transcripts of prior college work.

First Year at Grand Rapids Community College—

First Semester		Credits	Contact Hours
BA 101	Business and Technical English 1	3	3
CM 103	General Chemistry 1 OR	4	7
CM 113	Science Majors' Chemistry 1	4	7
CO 110	Introduction to Computer Information Systems	3	3
MA 110	College Algebra	4	4
		14	

Second Semester

BA 102	Business and Technical English 2	3	3
CM 104	General Chemistry 2 OR	4	7
CM 114	Science Majors' Chemistry 2	4	7
WE —	Wellness	1	2
PH 115	Technical Physics	4	6
PS 110	Survey of American Government	3	3
		15	

Second Year at Bay de Noc Community College—

Third Semester		Credits
ET 245	Instrumentation for Process Control	3
WT 110	Water and Wastewater Treatment Plants I	4
WT 230	Sanitary Microbiology	3
WT 240	Water Chemistry I	5
WT 270	Applied Hydraulics	4
		19

Fourth Semester*

WT 120	Water and Wastewater Treatment Plants II *	4
WT 250	Water Chemistry II *	5
WT 255	Mechanical Maintenance *	3
WT 260	Water Utility Management *	2
WT 272	Cooperative Education	6
		20
Total Credits		68

* The first four courses in the fourth semester are completed during the first half of the semester. The second half of the semester is spent in full-time cooperative work experience in the field.

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INTRODUCTION

Programs offered through Grand Rapids Community College Job Training help you to focus on your educational and vocational needs for gaining the job skills that will enhance your employment opportunities.

In our hands-on training programs, you are taught to accomplish specific learning objectives that have been developed with the help of advisory committees from local businesses. Classes are 18 weeks in length, and enrollment begins each month. Upon completion of your programs, you will receive job placement assistance. In fact, most of our participants are employed at the completion of their training.

Informational Tour

You are welcome to visit any of the Job Training programs and meet our instructors. You will have a chance to see students working in each of the labs, ask questions of our Job Training staff, and decide which training best fits your needs.

An Open House is offered every Tuesday at 9:30 a.m. and Thursday at 1:00 p.m. at the Leslie E. Tassell M-TECSM in Grand Rapids.

GENERAL INFORMATION

When entering any of the programs, you will be assisted by the support staff and instructors to determine the most appropriate training plan for you. Our experience indicates that individuals with a high interest and/or desire in a specific occupational area generally have higher success and employment rates in that area.

Program curricula are based on specific objectives recommended by employers. You are continually evaluated by recording skills you have accomplished. This is used to measure your progress and lead you to the eventual completion of your training program.

After reaching your maximum level of attainment under the available conditions, you will be recommended for placement. All evaluative materials and program information will be available for review by referring and monitoring agencies and prospective employers. A certificate of completion will be presented to you after the minimum requirements of the program have been met.

PROGRAM OVERVIEW

Automotive Technician - 18 weeks

Students learn all aspects of mechanical maintenance and repair of cars and light trucks. As students complete each module of this program, they take the appropriate Michigan Mechanics Certification Tests. The present certification success rate is 97%.

CAD Technician - 18 weeks

Students learn drafting concepts using AutoCAD software. Both architectural and machine drawings are covered. Students should have previous work experience and/or education in engineering, drafting, or manufacturing.

Machinist/CNC Technician - 18 weeks

Students learn how to set up and operate manual and computer controlled metal machine equipment. Blueprint reading, precision measuring, layout, and CAD are included. Students completing this training enter jobs and apprenticeships in the machine trades and as CNC machine operators.

Office Technician - 18 weeks

Students learn a variety of Microsoft applications on the personal computer, including operating systems, word processing, data management, electronic spreadsheets, and Internet exploration. Skills acquired in this course prepare the student to use the latest Microsoft software applications required in most of today's work environment.

Welding/Fabrication Technician - 18 weeks

Students have the appropriate equipment available to learn the most up-to-date welding techniques. This enables them to develop welding skills that make them employable in a variety of welding occupations. All phases of Gas, Arc, MIG, and TIG welding are covered.

Construction Trades - 18 weeks

This program will focus on the fundamental skills needed for entry into the construction industry. These include blueprint reading, math, safety, wall layout, roofing, drywall, basic electrical, basic plumbing, finish carpentry, and cabinet making.

ENROLLMENT INFORMATION

Admission/Tuition

Job Training programs are 18 weeks long. In certain instances it may be possible, with the permission of the director and the instructor, to enroll for shorter periods of time in order to receive instruction in certain specific skill areas. All classes are \$3,600. Selection of trainees is based upon the date of application, academic readiness, and successful completion of the assessment process. If enrollment in a program is limited and the applicant has met all the above criteria, final selection will be based upon the date of application.

Refunds

The refund policy for all programs offered by GRCC Job Training is:

- A. 100% - prior to the student's scheduled start date
- B. 75% - prior to 5% of calendar days
- C. 50% - prior to 10% of calendar days
- D. No refund - after 10% of calendar days

Please be advised that dropping a program may permanently affect eligibility for financial aid.

Financial Aid

Our Job Training staff will assist you in accessing financial resources to pay the educational costs of enrollment in a program. Job Training realizes that you and your parents or spouse have the primary responsibility of providing financial resources for education. Therefore, creating the right financial aid package for you is very important.

If you are in need of financial resources, you should apply for financial aid by completing an application for Federal Student Aid during the month before your selected program begins. GRCC staff can process a financial need analysis used to determine your eligibility for student financial aid. By combining funding options such as self-payment, federal, state, college, and community-based resources, we can help design a financial aid package to help meet the majority of your financial needs.

For information and applications, contact GRCC Job Training, 622 Godfrey SW, Grand Rapids, MI 49503; (616) 234-3800.

ACADEMIC POLICIES

Standards of Progress

The instructor will evaluate students monthly. The evaluation includes attendance, work behaviors and completion of performance objectives.

Grading Scale

Job Training uses the following grading scale based on attendance and accomplishment of specific performance objectives:

Monthly Objectives Completed/Grade

90-100% / Above Average

80-89% / Average

70-79% / Satisfactory

Below 70% / Unsatisfactory

Evaluation Policy

You will be evaluated upon completion of required performance objectives. A listing of objectives is available from your instructor or from Job Training support staff. You must successfully complete a minimum of 70 percent of the monthly objectives to maintain your enrollment status. Participants who fall below the 70 percent minimum will receive notice of unsatisfactory performance and be given a probationary period to bring their evaluation up to a satisfactory level. Evaluation will take place monthly. One copy will be given to you, and another will be placed on file.

Termination

If you are unable to complete the minimum course objectives after the probationary period, your progress will be re-evaluated and you may possibly be terminated from the program.

Re-Admission

Former students or students dropped because of unsatisfactory progress or attendance must petition the Director of Occupational Training for re-admission.

Review Process

If you are in violation of the attendance policy or do not meet the monthly 70 percent minimum objectives, you will be informed, in writing, of your performance.

If the problem is not corrected as specified in the Unsatisfactory Performance document, you will meet with a review committee consisting of your instructor and administrative or support staff. They will make a decision on your continued enrollment.

Attendance

Good attendance not only promotes good scholarship but also indicates dependability to prospective employers.

You are responsible for prompt attendance and participation in all training activities. Absences are considered by your instructors in determining student achievement. It is your responsibility to make up classroom and lab work missed. Make-up tests and exams will be administered at the instructor's discretion.

Absences shall not exceed 7 percent of the total training time. That percentage shall be cumulative and applied to the training program where the absences occurred. If you exceed one-half of the allowable number of absences, you will receive a written warning. If you exceed three-quarters of the allowable absences, you will be placed on probation.

If you are absent more than 7 percent of the total training time, you will be called before the Review Committee or be recommended for termination from the program. You do have the right to appeal termination status and Review Committee decisions.

Classroom/Lab Requirements

GRCC Job Training participants must adhere to all classroom/lab rules of conduct and safety requirements. It is recommended that you dress in a manner that would be acceptable to prospective employers.

In areas such as shops and laboratories where there may be potential for accidental injury, you will be required to wear safety glasses and/or other protective clothing. Your instructor will clarify these requirements with you upon your enrollment.

STUDENT SERVICES

Job Placement

A primary goal of Job Training is job placement upon completion of training. To ensure the success of every graduate, we offer a complete and thorough job placement service.

Programs are specifically designed to meet the requirements of area business and industry. Advisory committees consisting of business leaders evaluate and revise curriculum content according to their needs.

Our staff works with you in establishing employment goals, good work habits, and effective job-seeking skills. The importance of attendance, attitude, peer relationships, and the ability to follow directions is emphasized.

We offer multiple job possibilities by exposing you to a cluster of occupations rather than specific jobs or tasks, providing greater employment options in an ever-changing market. The transferability of the skills developed is also increased by placing emphasis on the learning process as well as on the skill itself.

Student IDs

As a student in a Job Training program, you may participate in all college-sponsored activities. Student IDs are available from the Student Activities Office (SAO).

Support Services

Professional support staff are available to assist you in personal development, career exploration, and academic planning. Counseling may take any of the following forms:

- Confidential individual counseling (by referral)
- Program selection assistance
- Orientation sessions for incoming students
- Referrals to appropriate support agencies
- Testing for interests, aptitudes, and placement
- Group seminars in personal growth, educational options, financial assistance, health problems, study skills, job search/employability skills

Disability Provisions

These services are available through the GRCC Disability Support Services, (616) 234-4140.

Veterans Regulations

Job Training courses are VA certified. Veterans planning to use their benefits while attending GRCC Job Training should be aware of federally and institutionally enforced regulations. To retain certification by GRCC, a Veteran must maintain satisfactory progress as identified for financial aid in the program attempted. For more information, contact the Job Training Coordinator at (616) 234-3800 or the VA office at 1-(800) 827-1996.

PROGRAMS

Automotive Technician - 18 Weeks

Overview:

The Automotive Technician is required to be certified and licensed in the state of Michigan. As an Automotive Mechanic Technician, your job will be to diagnose and repair customer vehicles. Licensed technicians will use precision diagnostic equipment, service manuals, computer data and hands-on power tools to provide high tech, timely and quality service. To be most effective in the automechanic industry today, you will need to be able to read service manual schematics, perform basic shop math, read measurement tools, and communicate effectively with others using automotive terminology.

Course Recommendations:

The applicant should demonstrate reading and math skills and have a valid driver's license. The ability to work with others, good hand/eye coordination, good color acuity, and manual dexterity are also desired.

Course Outline:

- Introduction/Shop Safety/Tools
- Front End and Steering Systems
- Brake Systems, ABS
- Automotive Electricity
- Ignition and Fuel Systems; On-Board Computers
- Heating and Air Conditioning; Recovery and Recycling
- Engine Driveability
- Math and Measuring
- Computer Operation
- Teamwork and Communication Skills

CAD Technician - 18 Weeks

Overview:

As a CAD (Computer Aided Design) Drafter/Detailer, your job will involve using a CAD computer workstation to perform basic duties such as revising mechanical, architectural, civil or electrical drawings from pre-existing drawings and generating new drawings from engineers' sketches. Many CAD Drafters/Detailers advance in this profession and become designers, CAD department managers or degreed engineers. Effective workers in today's fast-changing CAD environment need to be able to operate CAD hardware and software, read blueprints, perform technical math, and communicate effectively with others using current CAD terminology.

Course Recommendations:

Proficiency in mathematics including algebra and geometry is required, and the ability to work with others is essential. The applicant also must be able to read, to write in a grammatically correct and coherent manner, and should have prior experience and/or training in a technical or manufacturing area.

Course Outline:

- CAD Skills
- Blueprint Reading and Sketching
- Technical Mathematics
- Computer Hardware
- Computer Software including CAD Applications
- Teamwork and Communication Skills

Machinist/CNC Technician - 18 Weeks

Overview:

As a Machine Tool/Computer Numerical Control (MT/CNC) Technician, you will shape metal and various materials to precise dimensions by using machine tools. MT/CNC Technicians plan and set up the correct sequence of machine operations in accordance with blueprints, layouts or other instructions to write both manual and computer-generated machine programs. The Technician is required to use various hand tools, micrometers, gauges and other precision measuring instruments. To be most effective in today's manufacturing environment, you will need to be able to read blueprints, perform basic shop math, read measurement tools, and communicate effectively with others using current Machine Tool/CNC terminology.

Course Recommendations:

The applicant should demonstrate reading and math skills and the desire to work in a manufacturing environment. The ability to work with others, good hand/eye coordination and manual dexterity are also desired.

Course Outline:

- Blueprint Reading
- Mathematics
- Using the Machinist Handbook
- Using Hand Tools
- Bench Work
- Layout
- Manual Machine Tool Operations
- Precision Measuring
- CNC and Conversational Machine Tool Operations
- Computer Operation
- Teamwork and Communication Skills

Office Technician - 18 Weeks**Overview:**

No matter where you work, it is becoming increasingly important that you have computer operating skills. You need to know how to use the features and functions of the Windows environment, word processing, spreadsheet, database, and presentation software. Computer literacy is a must in today's work environment.

Course Recommendations:

The applicant should demonstrate reading, writing and keyboarding skills. The ability to type/keyboard a minimum of 25 wpm is desired.

Course Outline:

(The course will focus on Microsoft software applications.)

- Systems Operations
- Word Processing
- Electronic Spreadsheets
- Data Management
- Report Generation
- Presentation Software
- E-mail and Internet Applications
- Business Communications

Welding/Fabrication Technician - 18 Weeks**Overview:**

As a Production Welder, your job may include basic duties such as cutting, brazing and welding of various metal components as well as more advanced duties such as MIG and TIG welding using aluminum and stainless steel. Welders will need to have an understanding of metallurgy, American Welding Quality Standards, and welding equipment maintenance. To be most effective in the manufacturing environment today, you will need to be able to read blueprints, perform basic shop math, read measurement tools, and communicate effectively with others using current welding terminology.

Course Recommendations:

The applicant should demonstrate reading and math skills and the desire to work in a manufacturing environment. The ability to work with others, good hand/eye coordination, and manual dexterity are also desired.

Course Outline:

- Introduction and Shop Safety
- Basic Welding Theory
- Math and Measuring
- Blueprint Reading
- Shielded-Metal Arc Welding, LAP, TEE, 1, 2, 3, 4G Test Plates
- Oxe-acetylene Welding, All Joints
- Gas-metal Arc Welding (MIG), Steel
- Gas-metal Arc Welding (MIG), Aluminum
- Flux-cored Arc Welding (FCAW)
- Gas-tungsten Arc Welding (TIG), Steel, Aluminum, Stainless Steel
- Plasma-Arc Cutting
- Submerged Arc Welding
- Computer Operation
- Teamwork and Communication Skills

Construction Trades - 18 Weeks**Overview:**

The Construction Trades program focuses on the fundamental skills needed for entry into the construction industry. Many technical skills are required for an individual to be successful in the construction industry. To be most effective in today's construction industry you should know how to perform blueprint reading, shop math, communication, and teamwork.

Course Recommendations:

The applicant should demonstrate reading and math skills. The ability to work with others, good hand/eye coordination, and manual dexterity are also desired.

Course Outline:

- Basic Safety
- Construction Math
- Hand Tools
- Power Tools
- Blueprints
- Floor Systems
- Wall and Ceiling Framing
- Roof Framing
- Roofing Applications
- Stairs
- Plastic Pipe and Fittings
- Copper Pipe and Fittings
- Basic Electricity
- Electrical Safety
- Wiring: Residential
- Drywall
- Cabinet and Countertop Making

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The college year is composed of two semesters and summer sessions. Units of academic study are recorded in credit-hours. A year-long (Fall - Winter - Spring) class schedule, listing day and evening classes, is published in the Spring of each year.

Independent Study

Reading or Independent Study Courses are offered in most disciplines. These courses are numbered 298 and 299 in the disciplines in which they are offered. No more than two semester hours will be given for the 298, 299 sequence.

Before registering for the Independent Study, the student is to make arrangements according to these guidelines, and initiate the process with the Department Head/Program Director of the instructional department. Independent Study contract forms are available in the respective academic dean's office.

1. For the student:

- A. The student originates the proposal.
- B. The student is responsible for describing proposal.
- C. The student states the objectives in measurable terms.
- D. The student describes the way in which he/she intends to accomplish his/her objectives.
- E. The student produces something measurable according to the stated objectives. The production might be a paper, a work of art, a musical composition, a movie, a TV tape, a recording or the like.
- F. Tuition must be paid or no grade or credit is given. Pay tuition before starting the study.

2. For the faculty directing the project:

- A. The faculty member may assist the student in the clarification and construction of the description, objectives, and the way of completing the project.
- B. The faculty member will supervise the project to see that the 800-minute instructional time per credit hour requirement is fulfilled. One credit hour represents 16 or 17 hours class time.
- C. The faculty member will grade the final project according to the prevailing grade norms.

3. General Guidelines:

- A. Any faculty member may refuse to supervise independent studies.
- B. The written proposal for all independent studies should be clear and to the point.
- C. All subjects or proposals should relate to the subject matter area under which the study is taken.

Project Seminars

Project Seminars allow two or more students to study and use in a project material related to the curriculum in those departments listed in this catalog.

The Project Seminar is different from Independent Study in that students in the Project Seminars do not work independently outside of a classroom or laboratory, but under the supervision of an instructor.

Project Seminars in any department are not necessarily the same from year to year since they are intended to meet changing conditions and demands. Project Seminars may be repeated. No more than 10 Project Seminar credits will apply toward graduation requirements.

Limits and Repeatability of Independent Studies and Project Seminars

Students may not submit more than 12 credits of Project Seminar and Independent Study courses in any combination toward fulfillment of the requirements for any associate degree. These courses are normally numbered 291, 292, 293, 294, 298, 299.

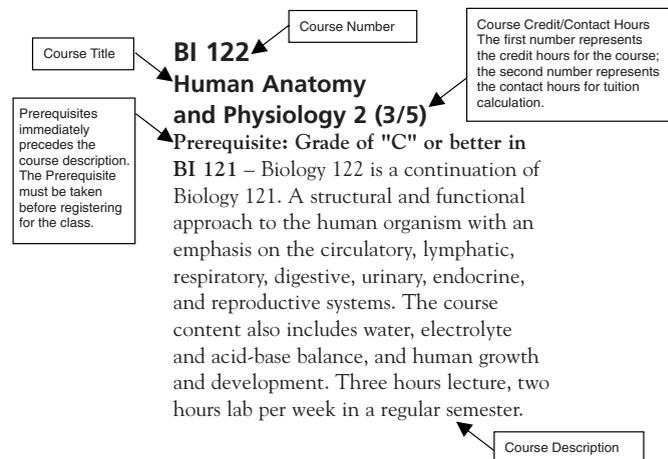
Further, no more than two credits of the above-mentioned 12 may be in Independent Study courses numbered 298, 299. Any Project Seminar and Independent Study course may be repeated for credit up to the above limits.

Course Arrangement

The courses are listed numerically within an alphabetical arrangement of major subject matter areas.

Credits for courses one to 99 are accepted for graduation at Grand Rapids Community College. Credits for some courses are transferable only with approval of the admitting institution. Whenever possible, general education courses attempt to present material to reflect the multi-ethnic nature of American society.

Example:



Course Contact Hour

One course contact hour is a total of 60 minutes of student instruction in which the student is scheduled to come into contact with an instructor or with tutorial or laboratory equipment. The total contact hours for a course are calculated by summing the total instructional minutes for that course in the academic period and dividing by 60. The following non-traditional courses are excluded from this formula:

1. Cooperative Education
2. Clinical
3. Practicum, Internships
4. Independent Studies
5. Field Work

AD – ASSOCIATE DEGREE NURSING

AD 104

Foundations of Nursing (2/2)

For students who want to learn about nursing; includes historical perspective, introduction to nursing process, nursing theories, standards of conduct, the legal scope of practice, ethical dilemmas, levels of nursing education, and career opportunities in nursing today. Expectations for the future are presented along with an overview of skills needed to practice nursing. Open to all students. Offered Fall and Winter semesters.

AD 105

Nursing Assessment of the Healthy Person (3/6)

Prerequisites: formal acceptance into the Associate Degree Nursing Program and AD 104; BI 121 and GH 120 (may be taken concurrently) – Assessment skills are introduced and used to form the basis for nursing care planning. Basic concepts of health such as comfort, rest, activity, mobility, nutrition and elimination are included. The nursing process is used in assessing and promoting self-care. Clinical experience emphasizes the assessment of healthy persons. Offered Fall and Winter semesters.

AD 112

Nursing of the Person with Simple Health Needs (6/12)

Prerequisites: AD 105, BI 121, BI 122 (may be taken concurrently), and GH 120 – The nursing process is used to promote self-care for persons with simple medical-surgical needs; explores health problems of the “supportive-educative” and “partly compensatory” person. Attention is given to legal scope of practice and acceptable standards of conduct. Students learn importance of interpersonal relationships and care for patients with simple health needs in structured health care and community settings. Offered Fall and Winter semesters.

AD 113

Nursing of the Person with Mental Health Needs (4/10)

Prerequisites: AD 105, GH 120, BI 121, and PY 201; (BI 122 and PY 232 may be taken concurrently) – Mental health concepts are introduced and used with the nursing process to promote self-care; explores mental health problems of persons at all stages of self-care. Students learn to develop therapeutic relationships. Clinical experience is equally divided between caring for persons with psychiatric diagnoses and meeting the mental health needs of persons with a physical illness in structured health care and community settings. Offered Fall and Winter semesters.

AD 202

Family Nursing: Childbearing (4/8.5)

Prerequisites: AD 112, AD 113, and BI 127 – The nursing process is used to promote self-care of persons during the reproductive cycle; incorporates concepts of interpersonal relationships while promoting family-centered care. Clinical experience is provided in structured health care and community settings. Offered Fall and Winter semesters.

AD 203

Family Nursing: Child Rearing (4/8.5)

Prerequisites: AD 112, AD 113, and BI 127 – The nursing process is used to promote self-care of children and families; focuses on effects of illness and hospitalization, on growth and development of the child, and on responses of the family. Incorporates concepts of interpersonal relationships while emphasizing family-centered care. Clinical experience includes care of hospitalized children and interaction with well children and those with special needs in structured health care and community settings. Offered Fall and Winter semesters.

AD 204

Family Nursing: Aging (3/6)

Prerequisites: AD 112, AD 113, and BI 127 – The nursing process is used to promote self-care for adults from mid-life to death. Incorporates concepts of interpersonal relationships and human responses to the aging process. Clinical experience is provided in structured health care and community settings. Offered Fall and Winter semesters.

AD 220

Nursing of the Client with Complex Health Needs (5/9)

Prerequisites: AD 202, AD 203, and AD 204 – The nursing process is used to promote self-care for persons with complex needs that may be chronic and may involve major lifestyle changes. Incorporates concepts of interpersonal relationships. Clinical experience is directed toward providing total care for several patients in a medical-surgical setting. Offered Fall and Winter semesters.

AD 221

Nursing of the Client with Critical Health Needs (2/4)

Prerequisites: AD 202, AD 203, and AD 204 – The nursing process is used to provide “wholly compensatory” care for patients. Explores the role of the patients’ families, ethical dilemmas, the legal scope of practice, and the political climate of critical care settings. Clinical experience is provided in critical care settings. Offered Fall and Winter semesters.

AD 222

Nursing Care Management (3/7)

Prerequisites: AD 202, AD 203, and AD 204 – Management concepts and the nursing process are used to provide care for groups of persons and families; incorporates concepts of interpersonal relationships in organizing the delivery of care; focuses on delegating care and directing personnel. Clinical experience is provided in structured health care settings so that students work cooperatively with experienced staff R.N.’s. Offered Fall and Winter semesters.

AD 298

Independent Study in Nursing 1 (1/1)

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of Associate Degree Nursing and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should elect AD 298. No student may earn more than two credits in independent study.

AD 299**Independent Study in Nursing 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of Associate Degree Nursing and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should elect AD 298. No student may earn more than two credits in independent study.

ANATOMY AND PHYSIOLOGY (See Biology)

AN – ANTHROPOLOGY**AN 201****Introduction to Anthropology (3/3)**

Prerequisite: Sophomore standing – The biological study of man; the races of mankind and man's relationship to other living types; nature and diffusion of culture; analysis and comparisons of primitive societies.

AN 205**Introduction to Archaeology (3/3)**

An introduction to prehistoric and historic archaeology including methodology and an overview of the major archaeological theories and discoveries.

AN 210**Cultural Anthropology (3/3)**

Students will examine ancient and modern cultures of the world. The emphasis is on non-Western and the so-called nontraditional groups, but with some cross-cultural comparisons of Western and non-Western social patterns. The religious, social and political practices of various indigenous peoples and the impact these practices have on gender and age-group relations will set the tone for this course. Students who took AN 201 telecourse Cultural Anthropology will not get credit for AN 210.

AN 280**The Culture and History of Native Americans (3/3)**

This course examines the various cultures and histories of Native Americans, concentrating on those cultures found in North America. The course will examine the prehistoric background of Indians, the impact of contact with Europeans, and the changes which took place in Indian cultures as the result of that contact. The course will examine the cultural conditions of Indians in the twentieth century.

AN 298**Independent Study in Anthropology 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of anthropology and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate dean before they register for this course. Students electing independent study for the first time should take AN 298. No student may earn more than two credits in independent study.

AN 299**Independent Study in Anthropology 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of anthropology and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take AN 298. No student may earn more than two credits in independent study.

AP – APPRENTICESHIP TRAINING

These are related training courses offered to persons who are serving as apprentices and to persons in industry and construction trades who wish to upgrade their skills. For further information see the related Instruction Coordinator.

NOTE: AP 158, AP 168, AP 178, AP 188, AP 258, AP 268, AP 278, and AP 288 are certified by the State of Michigan Electrical Administrative Board. Successful completion of these courses will credit a person with 576 hours toward requirements to take the State of Michigan Journeyman Electrician Licensing examination. For more information contact the Apprenticeship Coordinator.

AP 103**Conveyors (2/2.25)**

Prerequisites: TE 103, EG 120 or equivalent – A course covering the various types of conveyors used in an industrial plant, with focus on installation and maintenance.

AP 108**Technical Skills Enhancement Preparation (2/2)**

The skill trades applicant will prepare for skill Trades Test Battery. The course will provide the potential candidate the knowledge necessary to be successful for entry into skill trades occupations.

AP 113**Mechanical Power Transmissions (2/2.25)**

Prerequisites: TE 103, EG 120 or equivalent – A course in power transmission equipment, which supplies the essential links between machines and their sources of driving power. This course discusses bearings, chain drives, belts, conveyors, couplers, controls, gears, speed reducers and lubrication.

AP 114**Machine Trades Blueprint Reading (2/2.25)**

An introductory course covering the lines, views, dimensions and notes used on blueprints in the machine trades. Some free-hand sketching will also be incorporated.

AP 114A**Basic Blueprint Reading
Module A (1/1.13)**

Students learn to identify the types of lines and views used in engineering drawings and recognize and interpret the attributes of an assembly and detail engineering drawing.

AP 114B**Basic Blueprint Reading
Module B (1/1.13)**

Prerequisite: AP 114A – Students interpret engineering working drawing measurements and dimensioning as well as interpret engineering drawing notes.

AP 118**Carpentry 1 (3/4)**

Prerequisite: High school algebra or equivalent – An introduction to basic construction and maintenance safety, mathematical problems, hand tools, power tools, blueprint, rigging practices, wood building materials, hand and power tools, and floor systems.

AP 123**Millwright Handbook (2/2.25)**

Prerequisites: TE 103, EG 120 or equivalent – Trains the apprentice to use the handbook to solve problems related to the millwright's trade.

AP 128**Carpentry 2 (3/4)**

Prerequisite: AP 118 – An advanced course in roof framing and installation of windows and doors.

AP 132**Pipefitting 1 (3/4)**

Students learn basic pipefitting, hand and power tools, threaded pipe fabrications, correct ladder alignment, and scaffold placement.

AP 133**Millwright Tools and
Equipment (2/2.5)**

Prerequisites: TE 103, EG 120, or equivalent – A study of the tools and equipment required and used by the millwright apprentice.

AP 137**Pipefitting 2 (3/4)**

Prerequisite: AP 132 or equivalent – Students will learn the operation of motorized equipment, excavations, and underground pipe applications.

AP 138**Carpentry 3 (3/4)**

Prerequisites: AP 118, AP 128 – This course will introduce the 2nd year carpentry apprentice to the fundamentals of reading prints, site layout, concrete, reinforcing materials and foundation work.

AP 142**Pipefitting 3 (3/4)**

Prerequisites: High school algebra or equivalent, AP 132, and AP 137 – This course will introduce the 2nd year pipefitting apprentice to the fundamentals of excavating, installation, drawings, systems, and pipe fabrication.

AP 146**Sheetmetal 1 (3/4)**

Prerequisite: High school algebra or equivalent – An introduction to basic construction and maintenance safety, mathematical problems, hand tools, blueprint, rigging practices, the sheet metal trade, tools, fasteners, installing of air distribution.

AP 147**Pipefitting 4 (3/4)**

Prerequisites: High school algebra or equivalent, AP 132, AP 137, and AP 142 – This course will introduce the 2nd year pipefitting apprentice to the fundamentals of butt welds, rigging, and pipe hangers and support.

AP 148**Carpentry 4 (3/4)**

Prerequisites: AP 118, AP 128, and AP 138 – This course will introduce the 2nd year carpentry apprentice to the fundamentals of concrete, reinforcing, handling, and placing of concrete and manufactured forms.

AP 149**Plumbing 1 (3/4)**

Prerequisite: High School Algebra or equivalent – An introduction to basic construction and maintenance safety, mathematical problems, hand tools, power tools, blueprint, rigging practices, the plumbing trade, plumbing tools, math, drawings, plastic-copper pipes and fittings.

AP 156**Sheetmetal 2 (3/4)**

Prerequisite: AP 146 – Students learn introductory sheet metal practices including sheetmetal layout, processes, math, and fabrication line techniques with parallel line development.

AP 158**Construction Electricity 1 (3/4)**

Prerequisite: High School Algebra or equivalent – This course will introduce the 1st year electric apprentice to the electrical field, the apprentice program, tools of the trade, basic electrical trade mathematics, proper rigging, blueprint reading, job safety, hand conduit bending, test equipment, and the NEC.

AP 159**Plumbing 2 (3/4)**

Prerequisites: AP 149 or equivalent – Students learn basics of cast-iron and carbon pipes and fittings, fixtures, faucets, drains, waste-vents delivery, and water distribution systems.

AP 160**National Electric Code (3/3)**

Prerequisite: AP 158 – A study of the application and interpretation of the National Electric Code rules. This course covers the current edition of the NEC in preparation to sit for the State of Michigan Journeyman's or Master's electrical licensing exam.

AP 161**National Electrical
Code Update (1/1)**

Designed for licensed journey and master electricians. Meets the requirements established by the State of Michigan for continued education on the latest National Electric Code. Successful completion allows for continuance as a licensed electrician. A certificate will be issued upon completion.

AP 166**Sheetmetal 3 (3/4)**

Prerequisites: AP 146 and AP 156 – The course will introduce the 2nd year sheetmetal apprentice to the fundamentals of maintenance, piping practices, fabrication, bends, and soldering.

AP 168**Construction Electricity 2 (3/4)**

Prerequisite: AP 158 – This course will introduce the 1st year electrical apprentice to electrical theory, materials, conductors, blueprints, and commercial, industrial, and residential wiring.

AP 169**Plumbing 3 (3/4)**

Prerequisites: High school algebra or equivalent, AP 149, and AP 159 – This course will introduce the 2nd year plumbing apprentice to the fundamentals of reading drawings, DWV piping, and drains.

AP 170**Communications Installation Technology 1 (3/4)**

A study of the installation of structured communication media: includes building construction techniques, standards, safety and Building Industry Consulting Services, International (BISCI) Level 1 Certification training.

AP 171**Communications Installation Technology 2 (3/4)**

A study of the installation of structured communication media: includes building construction techniques, standards, safety and Building Industry Consulting Services, International (BISCI) Level 2 Certification training.

AP 176**Sheetmetal 4 (3/4)**

Prerequisites: AP 146, AP 156, and AP 166 – This course will introduce the 2nd year sheetmetal apprentice to the fundamentals of specifications, SMACNA manuals, standards, insulation, gutters, and flashing.

AP 178**Construction Electricity 3 (3/4)**

Prerequisite: AP 158 and AP 168 – This course will introduce the 2nd year electrical apprentice to the fundamentals of alternating current, motors, grounding, conduit bending, and boxes and fittings.

AP 179**Plumbing 4 (3/4)**

Prerequisite: High school algebra or equivalent, AP 149, AP 159, and AP 169 – This course will introduce the 2nd year plumbing apprentice to the fundamentals of installing plumbing components, fuel gas systems, and servicing.

AP 188**Construction Electricity 4 (3/4)**

Prerequisites: AP 158, AP 168, and AP 178 or equivalent – This course will introduce the 2nd electrical apprentice to the fundamentals of conductor installations, cable tray, conductor terminations and splices, electric service installation, circuit breakers and fuses, contactors and relays, and electric lighting.

AP 214**Advanced Machine Trades Blueprint Reading (2/2.25)**

Prerequisites: EG 120, AP 114, or equivalent – An advanced course in the study and interpolation of complicated machine and tool prints of the machine trades.

AP 214A**Advanced Machine Trades Blueprint Reading Module A (1/1.25)**

Prerequisite: EG 120, AP 114, or equivalent – An advanced course in the study of technical sketching, dimensioning, and drawing of machine and tool parts in the machine trades.

AP 214B**Advanced Machine Trades Blueprint Reading Module B (1/1)**

Prerequisite: EG 120, AP 114, or equivalent – An advanced course in drawing construction, management, parts, prints and layout.

AP 218**Carpentry 5 (3/4.5)**

Prerequisites: AP 118, AP 128, AP 138, and AP 148 or equivalent – This course covers strength of materials, stair building, and some layout and estimating.

AP 222**Metallurgy (2/2.25)**

The application of metallurgical fundamentals to the machinability of common metals; the behavior of metals and cutting tools during the machining operation; the behavior of metal under production conditions; fatigue, warpage and their prevention.

AP 228**Carpentry 6 (3/4.5)**

Prerequisites: AP 118, AP 128, AP 138, AP 148, and AP 218 or equivalent – A course in layout and estimating the incorporate architectural drafting.

AP 231**Machine Handbook (2/2.25)**

Prerequisites: TE 103 and TE 104 – Trains the industrial worker to use the handbook to solve problems involving square roots, circles, formulas, tapers, threads, oils, coolants, and steel fabrication.

AP 231A**Machinery's Handbook Module A (1/1.25)**

Prerequisite: TE 103 and TE 104 – Trains the industrial worker to use the handbook to solve problems involving square roots, circles, formulas, tapers, threads, oils, coolants and steel fabrication.

AP 231B**Machinery's Handbook Module B (1/1)**

Prerequisite: TE 103 and TE 104 – Trains the industrial worker to use the handbook to solve problems involving square roots, circles, formulas, tapers, threads, oils, coolants and steel fabrication.

AP 232**Pipefitting 5 (3/4.5)**

A continuation of Pipefitting 4 (AP 147). Students learn to fabricate mitered turns and tees, read construction blueprints, and study boiler combustion operation. Students will also be introduced to electric arc welding.

AP 237**Pipefitting 6 (3/4.5)**

A continuation of Pipefitting 5 (AP 232). Students learn to fabricate complex pipe reducers and brackets, weld beveled pipe joints and perform destructive testing of welds. The students will also learn to read blueprints, create isometric pipe drawings, explain the draft and draft control for boiler systems, and make heating and cooling load calculations.

AP 238**Carpentry 7 (3/4.5)**

Prerequisites: AP 118, AP 128, AP 138, AP 218, and AP 228 or equivalent – The apprentice will be required to learn the design and application of interior and exterior trim as well as roof construction and door hanging.

AP 242**Pipefitting 7 (3/4.5)**

A continuation of Pipefitting 6 (AP 237). Students continue to learn blueprint reading specific to related trades as well as chemical treatment of boiler water, continued pipe welding, and hydronics system piping, pumps and accessories.

AP 246**Sheetmetal 5 (3/4.5)**

Prerequisites: AP 146, AP 156, AP 166, and AP 176 or equivalent – Students learn airflow and air distribution principles as well as principles of refrigeration as they will be applied by a sheet metal worker.

AP 247**Pipefitting 8 (3/4.5)**

A continuation of Pipefitting 7 (AP 242). Students learn the layout and construction of piping spool pieces, cost estimating, the operation of a low pressure boiler, welding laterals and other related fittings, as well as hydronic system configuration, controls, and diagnosis.

AP 248**Carpentry 8 (3/4.5)**

Prerequisites: AP 118, AP 128, AP 138, AP 218, and AP 228 or equivalent – A course in supervision, engineering aspects, and computer applications in carpentry.

AP 249**Plumbing 5 (3/4.5)**

Prerequisite: AP 179 – Students learn plumbing design and application as found in typical commercial buildings. Applicable code and blueprint reading are also covered.

AP 251**Industrial Physics (2/2.25)**

Prerequisites: TE103 and TE 104 or equivalent – A course in elementary physics that will cover mechanics, scientific notations, metric systems, simple machines, strength of materials, law of gases and hydraulics.

AP 256**Sheetmetal 6 (3/4.5)**

Prerequisites: AP 146, AP 156, AP 166, AP 176, and AP 246 – Students learn triangulation practices, field work practices, as well as arc welding and oxyacetylene cutting practices.

AP 258**Construction Electricity 5 (3/4)**

Prerequisites: AP 158, AP 168, AP 178, and AP 188 – This course will introduce the 3rd year electrical apprentice to the fundamentals of branch circuit, conductor, box fill and motor calculations, overcurrent protection, and distribution equipment.

AP 259**Plumbing 6 (3/4.5)**

Prerequisite: Permission of instructor – Students learn to wipe lead pipe joints as required to pass the State of Michigan licensing exam. Enrollment is limited to those who have instructor permission.

AP 266**Sheetmetal 7 (3/4.5)**

Prerequisites: AP 146, AP 156, AP 166, AP 176, AP 246, and AP 256 – Students learn worksite planning and supervisory skills as well as shop organization, work scheduling, air balance procedures, and a review of parallel and radial development.

AP 268**Construction Electricity 6 (3/4)**

Prerequisites: AP 158, AP 168, AP 178, AP 188, and AP 258 – This course will introduce the 3rd year electrical apprentice to the fundamentals of motor maintenance, motor controls, HVAC electrical systems, and hazardous location wiring.

AP 269**Plumbing 7 (3/4.5)**

Prerequisite: AP 259 – Students learn specialized service and installation techniques necessary for the plumbing trade. Also covered are a review of code in preparation for the State of Michigan licensing exam and the use of plumbing charts.

AP 270**Communications Installation****Technology 3 (3/4)**

Prerequisite: AP 170, AP 171, EL 132, and EL 144 – A study of the number systems, codes, Boolean algebra, minimization techniques, logic gates, code converters, microwaves, radar and navigational systems. Theory and operation of voltage and current controlled devices in the transmission and reception of frequencies.

AP 271**Communications Installation****Technology 4 (3/4)**

Prerequisite: AP 170, AP171, EL 132, EL 144, and AP 270: An advanced study of the installation of structured communication media: Includes updating industry practices, LAN competency, closet layout, Developing job plans, a board range of device applications, and BICSI Technician Level training.

AP 276**Sheetmetal 8 (3/4.5)**

Prerequisites: AP 146, AP 156, AP 166, AP 176, AP 246, AP 256, and AP 266 – Students learn to develop and fabricate louvers, dampers, access doors, exhaust systems. Students will also review layout and fabrication techniques to develop acceptable short outs.

AP 278**Construction Electricity 7 (3/4.5)**

This course covers special systems, a review of electric controls, and the National Electric Code.

AP 288**Construction Electricity 8 (3/4.5)**

Prerequisites: AP 158, AP 158, AP 178, AP 258, AP 268, and AP 278, or equivalent – Work on high-voltage installations and the National Electric Code.

AP 298**Independent Study Apprenticeship Training 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of apprenticeship and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take AP 298. No student may earn more than two credits in independent study.

AP 299**Independent Study Apprenticeship Training 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of apprenticeship and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take AP 298. No student may earn more than two credits in independent study.

AR – ARCHITECTURE**AR 103****Building Codes and Standards (2/2)**

The application of building codes is studied referencing IBC (International Building Code). Barrier-free and local zoning codes are discussed. Two hours lecture. Offered Fall and Winter semesters.

AR 104**Residential Design (4/4)**

Prerequisites: AR 119, AR 105, and AR 201 – Students learn standards for planning and remodeling a house. They study design, planning, economics, building codes, and residential construction techniques. Students use CAD (Computer Aided Design) to generate a plot plan, foundation plan, floor plans, wall section, stairway details, floor systems, and elevations of a house. Offered Winter and Summer semesters.

AR 105**Construction Materials 1 (3/4)**

Students will apply fundamental construction principles and the use of materials and methods for both commercial and residential building based on the Construction Specification Institute's (CSI) Master Format. Students will be introduced to the Architectural Technology Program and to the basic concepts of the construction process, building codes and standards and structural design. This course will be limited to CSI Divisions 1 through 5. Replaces AR 102. Offered Fall semester.

AR 106**Construction Materials 2 (3/4)**

Prerequisite: AR 105 **Co-requisite:** AR 103 – Students will apply fundamental construction principles and the use of materials and methods for both commercial and residential building based on the Construction Specification Institute's (CSI) Master Format. This course is a continuation of AR 105, Construction Materials 1. This course will be limited to CSI Divisions 6, 7, 8, 9, 15, 16, sound control, heat loss, and a brief review of Divisions 10-14. Replaces AR 101. Offered Winter semester.

AR 111**Orientation to Architecture (2/2)**

Introductory course exposing students to the history of architecture, design, landscape, interior design, and urban planning and the profession of architecture. Offered Fall and Summer semesters only.

AR 112**Mechanical and Electrical Drafting (3/4)**

Prerequisites: AR 119, AR 120 and AR 121 – Students study the design of heating, cooling, plumbing, and electrical building systems, using Computer Aided Design (CAD). They learn to create mechanical and electrical working drawings. Four hours lecture/lab combination. Offered Winter semester.

AR 119**Introduction to Architectural CAD (3/4)**

Prerequisite: Previous computer experience **recommended** – Students use CAD (Computer Aided Design) to generate graphics to create architectural drawings. Study includes terminology, techniques, and application of CAD to construct architectural plans, elevations, and sections. Two-dimensional design drafting is emphasized. Offered all semesters.

AR 120**Architectural Working Drawings 1 (4/6)**

Prerequisites: AR 105 and AR 119 – A study of commercial building plans. A typical light commercial structure is drafted using Computer Aided Design (CAD) into a set of construction drawings. Code restrictions, material use, and construction methods will be emphasized. Six hours lecture/lab combination. Offered Winter semester.

AR 121**Architectural Working Drawings 2 (4/6)**

Prerequisites: AR 119 and AR 120 – Drafting of architectural commercial working drawings including site plan, floor plan, foundation plan, elevations, structural plan, and sections. Students learn to use Computer Aided Design (CAD) to produced working drawings. Six hours lecture/lab. Offered Fall semester.

AR 125**Print Reading and Specifications (3/3)**

Students will apply fundamental principles, methods and techniques in the reading, interpreting and understanding of the construction documents, both prints and specifications, used in the construction of commercial and residential buildings. Offered Fall semester.

AR 201**Architectural Graphics 1 (3/6)**

Application of basic lines and surfaces in the design of objects; planes and elevations, sections, cross-sections, isometric drawing, warped surfaces, parabolas, hyperbolas; includes sketching, use of instruments, lettering, geometric construction, and orthographic projections. Includes the computation of forces in a truss, using vectors, drawing contours, determining cut and fill. Six hours lecture/lab. Offered Fall semester.

AR 202**Architectural Graphics 2 (3/6)**

Prerequisite: AR 201 – Presentation methods, including linework, paraline and isometric drawings composition; one- and two-point perspective, shade and shadows; both pencil and color marker rendering are studied. Six hours lecture/lab. Offered Winter semester.

AR 207**Construction Surveying (3/4)**

Basic surveying practices including the operation of surveying instruments and equipment, measurement of lines and angles, leveling operations, field note-taking and construction techniques. Four hours lecture/lab combination. Offered Summer semester.

AR 208**Design Studio: Commercial Building Design (4/4)**

Prerequisites: AR105, AR106, AR 119, AR120, and AR 121 **Co-requisite:** AR 112 – Students learn the process of designing a commercial building from the initial programming to the design development of a building. The use of multiple disciplines to design the building will be studied. The multiple disciplines include: architecture, interiors, structures, lighting, and related disciplines. Students will work both individually and as teams on the building. Offered Winter semester.

AR 298**Independent Study in Architecture 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of architecture and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take AR 298. No student may earn more than two credits in independent study.

AR 299 Independent Study in Architecture 2 (1/1)

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of architecture and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take AR 298. No student may earn more than two credits in independent study.

AS – ASTRONOMY

AS 102 Introductory Astronomy (3/3)

A descriptive survey of our understanding of the realm beyond the Earth's atmosphere. Topics include the stars, planets, galaxies and the universe as a whole. This course examines the ideas covering the birth, life and death of stars, planetary environments and also the creation and possible futures of the universe. Emphasis is placed on the descriptive aspects of astronomy rather than the mathematical theories. This is a non-laboratory course for non-science majors or those not requiring a lab science course. Students who wish to learn to identify the stars and constellations should enroll in AS 103. Science majors or those who require a laboratory science course should enroll in AS 103. Credit toward an associate degree may be granted for only one of the following: PC 131, AS 102, AS 103.

AS 103 Descriptive Astronomy (4/6)

A descriptive survey of our understanding of the realm beyond the Earth's atmosphere. Topics include the stars, planets, galaxies, and the universe as a whole. This course examines the ideas covering the birth, life and death of stars, planetary environments and also the creation and possible futures of the universe. Emphasis is placed on the descriptive aspects of astronomy rather than the mathematical theories. This is a laboratory course for science majors or those requiring a lab science course. The laboratory emphasizes observation of the night sky, learning sky motion, and identifying constellations, asterisms and stars. Those who do not require a laboratory science course should enroll in AS 102. Credit toward an associate degree may be granted for only one of the following: PC 131, AS 102, AS 103. Four hours lecture, two hours lab.

AS 298 Independent Study in Astronomy 1 (1/1)

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of astronomy and must have the written permission of the supervising instructor, and the appropriate Department Head/Program Director, the appropriate Dean before they register for this course. Students electing independent study for the first time should take AS 298. No student may earn more than two credits in independent study.

AS 299 Independent Study in Astronomy 2 (1/1)

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of astronomy and must have the written permission of the supervising instructor, and the appropriate Department Head/Program Director, the appropriate Dean before they register for this course. Students electing independent study for the first time should take AS 298. No student may earn more than two credits in independent study.

AT – ART

AT 105 History of Art Before 1400 (3/3)

A comprehensive mediated lecture/discussion of all the major global art periods of the past from the Prehistoric era through the 14th century, including an introduction to the arts of Asia, Africa, and Native Americas. Weekly chapter-length readings are required.

AT 106 History of Art Since 1400 (3/3)

A comprehensive mediated lecture/discussion of all the major global art periods of the past from the 14th Century to the 20th Century, including an introduction to the arts of Asia and the Native Cultures of Africa, the Americas, and Oceania. Weekly chapter-length readings are required.

AT 130 Two Dimensional Design 1: Principles (3/6)

(Formerly AT 102) Study of design elements and principles of composition as applied to the two-dimensional picture plane, through the use of various traditional black and white media and computer graphic software. Six studio hours.

AT 131 Two Dimensional Design 2: Color (3/6)

(Formerly AT 220) **Prerequisites:** AT 130 or permission of instructor – Study of basic color theories focusing on optical, psychological, and emotional responses, using various color media. Six studio hours.

AT 140 Drawing 1 (3/6)

(Formerly AT 101) Basic drawing techniques, applied to still life and portrait study, using black and white media. Six studio hours.

AT 141 Drawing 2 (3/6)

(Formerly AT 103) **Prerequisites:** AT 140 or permission of instructor – A continuation of AT 140 plus study of the clothed model, focusing on improving technical and compositional skills, using various black and white and color media. Six studio hours.

AT 150 Three Dimensional Design (3/6)

(Formerly AT 203) Application of three dimensional design concepts using paper, wood, metal, clay, and plaster or mixed media. Six studio hours.

AT 190 Art Abroad (2/2)

(Formerly AT 109) Travel abroad to experience and understand first hand different cultures and artistic traditions. Emphasis on painting, drawing, or photographing from museum objects, archaeological sites, or scenic and social views. Assessment by portfolio and/or exhibition.

AT 195 Art History Abroad (2/2)

(Formerly AT 115) Travel abroad to experience and understand first-hand different cultures and artistic traditions. Emphasis on lecture, discussion, and comparative analysis of museum collections, archaeological sites, and historic buildings. Assessment by written paper.

AT 200 Watercolor 1 (2/4)

(Formerly AT 107) An introduction to painting in transparent watercolor. Four studio hours.

AT 201**Watercolor 2 (2/4)**

(Formerly AT 110) **Prerequisites:** AT 200 or AT 218, or permission of instructor – Continuation of AT 200 plus introduction to opaque watercolor techniques, emphasizing personal expression. Four studio hours.

AT 214**Painting 1 (2/4)**

Traditional painting techniques, applying color sensitivity to still-lives, clothed models and other subjects, using oil and/or acrylic. Four studio hours.

AT 215**Painting 2 (2/4)**

Prerequisite: AT 214 or permission of instructor – A continuation of traditional practices plus contemporary techniques, to emphasize originality and experimentation, using oil and/or acrylic. Four studio hours.

AT 218**Mixed Media (2/4)**

(Formerly AT 108) Mixed media and non-traditional watercolor techniques emphasizing originality and experimentation. AT 200 is not a prerequisite for this course. Four studio hours.

AT 219**Landscape Painting and Drawing (2/4)**

(Formerly AT 121) Local on-site painting and drawing of scenic views using oil, acrylic, watercolor, or drawing media. Four studio hours.

AT 222**Introduction to Pottery (2/4)**

A “hands-on” experience with the ceramic process of mixing, pinching, coiling, slabbing and glazing clay. Four studio hours.

AT 223**Pottery: Throwing (2/4)**

Prerequisite: AT 222 or permission of instructor – An introduction to the techniques of the potter’s wheel; an opportunity to expand the techniques of hand-building and to further the study of glazing. Four studio hours.

AT 226**Pottery: Primitive Techniques (2/4)**

An introduction to primitive techniques of pottery including how to find and adjust clay, and the different firing processes such as sawdust and raku. Four studio hours.

AT 230**Life Drawing 1 (2/4)**

Drawing of the human form through study of the skeleton and nude model using black and white media. Four studio hours.

AT 231**Life Drawing 2 (2/4)**

Prerequisite: AT 230 or permission of instructor – A continuation of AT 230 plus study of the muscular system using black and white, and color media. Four studio hours.

AT 240**Jewelry (2/4)**

Fabricating and forging techniques of traditional and contemporary design. Four studio hours.

AT 245**Introduction to Sculpture (2/4)**

(Formerly AT 204) Carving, modeling, casting, and assembly techniques applied to relief and sculpture in the round, using various materials. Four studio hours.

AT 255**Art for the Elementary Classroom (3/4)**

(Formerly AT 100 - Art Education Workshop) A combination lecture and studio course designed to provide pre-service teachers with the background necessary to plan creative art experiences for the elementary student which will lead to divergent outcomes. The studio section provides opportunities to explore and develop these plans through the use of various art materials. Students will plan a lesson and teach it to elementary age students.

AT 260**Graphic Design 1 (3/4)**

Prerequisites: AT 130 or AT 140 – Course emphasizes the technical aspects of graphic design, the design process, and gestalt perception. Exposure to preparing art for printer in traditional terms and through the computer. Characteristics of different printing processes, typographic reproduction and paper are also explored. Field trips are included to local design agencies, printers and suppliers. Four lecture/lab hours.

AT 261**Graphic Design 2 (3/4)**

Prerequisite: AT 260 – A problem solving course in graphic design with emphasis upon the creative approach to design problems in advertising, corporate identity, multiple panel and packaging. Incorporates electronic design. Four lecture/lab hours.

AT 270**History of Architecture (3/3)**

(Formerly AT 206) An investigation of the architectural masterpieces and master architects from prehistory through postmodernism; structures are examined in terms of design, style, construction technology and historical/social significance. Special attention is given to Modern and Post-Modern architecture. Course involves field trips.

AT 271**Modern Art: 1850 to Present (3/3)**

(Formerly AT 208) An investigation of the major art trends in Europe and the Americas from 1850 to the present, focusing on issues of artistic style, techniques, interpretation of subjects, and social context. Special attention is given to the masters of modern painting.

AT 298**Independent Study in Art 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of art and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take AT 298. No student may earn more than two credits in independent study.

AT 299**Independent Study in Art 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of art and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take AT 298. No student may earn more than two credits in independent study.

BA – BUSINESS ADMINISTRATION

BA 101

Business and Technical English 1 (3/3)

Communication for technical and business students. Students develop skill in writing business letters, memorandums, and employment communications. They study the principles of business writing style, learn organizational strategies for different types of business communications, and review grammar and mechanics.

BA 102

Business and Technical English 2 (3/3)

Communication for technical and business students. Students learn the principles of good written and oral communication focusing on appropriateness for audience, clarity, conciseness, organization, and development. They practice different types of business communications such as formal, informal, and oral reports, instructions, graphics, proposals and descriptions.

BA 103

Introduction to Business (4/4)

Introduces business and non-business majors to the private enterprise system; the role of businesses in global markets; the establishing, financing, and managing of businesses; the producing and marketing of goods and services; careers available in business; and the technology used to compete in business.

BA 106

Starting a Business (2/2)

A review of the tremendous opportunities and challenges of owning and operating a business. This course reaches into the areas of highest risk for the new entrepreneur by asking the "tough" questions about how and where to start and provides practical information about solving those problems successfully.

BA 130

Computer Keyboarding (2/2)

On the computer, students develop basic touch keyboarding skills including proficiency in keyboarding alpha characters, top-row numbers, symbols, ten-key numeric pad and special function keys. Designed for business, data entry, and personal applications. (An introduction to Microsoft Word 2000 is also included.)

BA 133

Business Word Processing 1 (2/2)

Prerequisite: BA 130 or equivalent formal keyboarding – Introduces the formatting of personal communications, reports (including footnotes and endnotes), business letters, and tables; and further develops speed and accuracy of keyboarding on a computer.

BA 136

Business Word Processing 2 (4/4)

Prerequisites: BA 133 or one year of high school typing/keyboarding/word processing with "C" grade or better, and touch keyboarding rate of at least 35 words a minute; BA 145 or basic knowledge of Microsoft Word for Windows is also required – Students use computer software to produce letters, memos, reports, tables, and other business documents. Improvement of keyboarding speed and accuracy as well as production rate is emphasized.

BA 140

Notetaking (4/4)

Prerequisite: BA 130 or ability to key by touch – Students learn a rapid writing system of shortcuts based on the alphabet to increase their skill in recording notes for personal, educational, or career use. Offered Fall semester.

BA 145

Computer Applications in Business 1 (4/4)

Prerequisite: BA 133 or equivalent – Students learn to solve typical business problems using the computer as a management tool. Students become familiar with current methods of information processing, using word processing, spreadsheet, and database software. The preparation of business reports and the presentation of business data for analysis are emphasized throughout the course.

BA 148

Legal Office Applications 1 (3/3)

Prerequisites: BA 136 and BA 145 – Students learn basic legal processes of the court systems, define and use legal terminology, perform basic legal research, keep appointment diaries, prepare legal documents, and review language arts skills. Students are introduced to basic transcription skills, using transcription machines. With well-defined standards and directions, students will transcribe legal documents, law blanks, and legal correspondence commonly used in the law office.

BA 150

Business Mathematics (4/4)

The study of percentage, discounts, payrolls, marking goods, taxes, investments, debt payments and consumer credits.

BA 153

Personal Finance (3/3)

This course reviews the exciting and challenging areas of personal financial planning. This class is designed for all majors. Units of study include basic concepts for economic decision making, earning power, protection of income, spending patterns, saving and investment options, housing options and expenses, stocks and bonds, borrowing and financing, financial planning techniques, wills, estate planning, trusts, and retirement income possibilities.

BA 156

Accounting Fundamentals (3/3)

Students learn double-entry accounting and its use in a service business. Students complete the accounting cycle, learn methods of control, and prepare payroll records.

BA 160

Computerized Accounting 1 (2/2)

Prerequisite: BA 130 or equivalent – Students receive hands-on instruction in a computerized accounting program suited for very small and home-based businesses. Cash disbursements, cash receipts, accounts receivable, accounts payable, billing, purchasing, inventory control, payroll and general ledger are covered.

BA 170

Principles of Retailing (3/3)

The principles of retailing in a competitive economy. Determination of store locations and layouts, buying techniques, organizing and staffing, and store security. Aspects of consumer buying behavior, retail advertising and personal selling are included.

BA 172

Sales (3/3)

Principles of selling, presenting a sales demonstration, overcoming objections, closing sales, servicing the sales, and preparing and making sales presentations.

BA 174**Advertising (3/3)**

The role of the advertising agency; copy structure, trademarks, illustrations, layout, market research and advertising production; use of newspapers, magazines, radio, television, outdoor advertising, direct mail, display, and packaging.

BA 180**Cooperative Education in Business 1 (3/3)**

Prerequisite: Approval of Co-op Coordinator – Students participate in a cooperative program of work and learning involving area employers. They work a minimum of 15 hours a week (30 hours during summer) under supervision at approved employment, and their performance is monitored by the instructor. In addition, students are required to attend seminars or develop a project. Students **MUST** have the permission of the cooperative education coordinator before they register for this course.

BA 181**Cooperative Education in Business 2 (3/3)**

Prerequisite: Approval of Co-op Coordinator – For students in the second semester of cooperative education. Students participate in a cooperative program of work and learning involving area employers. They work a minimum of 15 hours a week (30 hours during summer) under supervision at approved employment, and their performance is monitored by the instructor. In addition, students are required to attend seminars or develop a project. Students **MUST** have the permission of the cooperative education coordinator before they register for this course.

BA 183**Supervision (3/3)**

The management functions of planning, organizing, staffing, leading, and controlling are related directly to the first level of management; distinctions are drawn between supervising in union versus nonunion situations. Individuals who expect to enter into a supervisory position or present supervisors who desire to improve their supervisory skills would benefit.

BA 201**Business Communications (3/3)**

A survey of interpersonal oral and written communication: presentational speaking, interviewing skills, listening, nonverbal communication, conflict resolution, group dynamics, letter and memo writing, developments in business communication technology.

BA 207**Business Law 1 (3/3)**

Introduction to legal rights and social forces; government, business, and society; contracts, personal property and bailment; and sales.

BA 208**Business Law 2 (3/3)**

Introduction to commercial paper, creditor's rights, insurance agency, partnership, corporation, and real property.

BA 209**Issues in Business Ethics (3/3)**

Students learn perspective of business practices and policies which critically examines current issues in business as they relate to business and its internal and external environments. Students learn to make knowledgeable decisions when confronted with conflicts in practice. The issue of business ethics is emphasized throughout the course, and a practical approach to recognizing, avoiding, understanding and resolving ethical problems confronting individuals in a business environment is discussed.

BA 230**Business Word Processing 3 (4/4)**

Prerequisites: BA 130 or a touch keyboarding rate of 45 words a minute and a working knowledge of Microsoft Word – Advanced document processing and MS Word applications; students use computer software to produce letters, memos, manuscripts, tables, and other executive communications. Production and timed writings are used to build and measure straight-copy and production rates.

BA 236**Machine Transcription (2/2)**

Prerequisites: BA 136 and BA 145 – Students will utilize prerecorded cassette tapes, transcribers, computers with word processing software, and selected reference materials to produce mailable, hard-copy business documents.

BA 239**Medical Office Applications (3/3)**

Prerequisites: GH 110 and BA 236 – Medical office ethics and procedures: appointments, patients' records, insurance forms, medical statements, and basic information on Medicare and Medicaid are discussed. Integration of these procedures is by machine transcription of recorded information.

BA 240**Medical Insurance and Coding (3/3)**

Students learn to prepare forms and file claims of major nationwide medical insurance programs used in health care providers' offices. They gain the basic knowledge of national diagnostic and procedural coding systems. Students learn the roles and responsibilities of the health insurance specialist. They study the major developments in the insurance industry, the influences of the federal government on billing practices, and the various types of third party reimbursements. They learn claims processing guidelines and review the updated standards for Blue Cross/Blue Shield, Medicare, Medicaid, CHAMPUS/TRICARE, Worker's Compensation, and Disability Compensation programs.

BA 242**Legal Office Applications 2 (3/3)**

Prerequisites: BA 148 and BA 236 – Students continue the study of the legal system, legal terminology, legal research, language arts, and job search skills. Students enhance decision-making skills by transcribing complex documents and completing legal projects utilizing the Internet, the library, community resources, and local legal office resources.

BA 245**Records and Information Management (3/3)**

Prerequisite: BA 145 or knowledge of Microsoft Access for Windows (not recommended for first-year students) – An introduction to the principles of records and information management. Students will learn how to establish a records management program, plan the retention and disposition of records, manage active and inactive records, and plan for records safety and security.

BA 247**Advanced Computer Applications in Business (4/4)**

Prerequisites: BA 136 and BA 145 – Students will develop problem-solving abilities while applying advanced software skills to real world situations by creating enhanced and integrated business documents. Students learn how data can be used, analyzed, and synthesized in a business situation. Recommendation: Prior satisfactory completion of BA 145 with a grade of “C” or better.

BA 248**Contemporary Office Procedures (3/3)**

Prerequisite: BA 136 or equivalent (not for first-semester students) – The duties, skills, and personal qualities needed by office employees; includes the office environment, equipment and supplies; information processing; appointments and office visitors; telecommunications; filing; travel arrangements; meeting preparation; human relations skills and career opportunities.

BA 254**Business Statistics (3/3)**

Prerequisite: One year of algebra – An introduction to the statistical concepts of organizing and interpreting business data. Includes collecting, tabulating, and analyzing data; averages, measures of dispersion, probability, sampling, tests of hypotheses, analysis of variance, correlation and regression analysis, introduction to time series, non-parametric tests.

BA 256**Principles of Accounting 1 (4/4)**

A study of principles of financial accounting. This course includes asset, liability, and owner's equity classifications, the accounting cycle for service businesses and merchandisers, accounting information systems, internal control, control of cash, accounts and notes receivable, inventory, plant assets and depreciation, current liabilities, and payroll.

BA 257**Principles of Accounting 2 (4/4)**

Prerequisite: BA 256 – A study of accounting for corporate organizations; investments and long-term borrowing including amortization procedures; survey of cost accounting, with emphasis on budgeting and standard of costs. Managerial accounting techniques, cash flow analysis, consolidations, and supplementary statements.

BA 260**Computerized Accounting 2 (2/2)**

Prerequisites: BA 130 or equivalent and BA 256 – Students learn to convert a company's set of books to a computerized accounting system in this advanced computerized accounting course. Employing a popular software package used in many small to medium businesses, students will cover such topics as general ledger, accounts receivable, accounts payable, payroll, inventory, job costing, and adjusting and closing entries. This is a hands-on course taught in a computer classroom.

BA 262**Cost Accounting (3/3)**

Prerequisite: BA 257 – Cost systems and cost accumulation methods including job order and process cost principles and practices. Planning and control of materials, labor, and factory overhead. Standard cost system with variance analysis.

BA 264**Intermediate Accounting (3/3)**

Prerequisite: BA 257 – A study of financial reporting concepts and processes. The course includes financial statement preparation and the accounting theory by which it is governed. It also includes accounting of balance sheet items: cash; marketable securities; receivables; inventory evaluation procedures; plant asset acquisitions, depreciation and retirement.

BA 268**Tax Accounting (3/3)**

Prerequisite: BA 256 (BA 257 strongly recommended) – An introductory course in income taxation and tax procedures for accounting majors and other business students. Emphasis will be placed on tax issues and return preparation for individuals and unincorporated businesses. Primary focus is on the development of working familiarity with tax forms, documentation and solution of tax problems affecting individuals. Federal taxation emphasized.

BA 270**Marketing (3/3)**

The study of the distribution of goods. Includes consumer buying behavior, product concepts, promotion activities, international and service marketing, and ethics and the future of marketing. Students with no business experience should first complete BA 103.

BA 272**Marketing Problems (3/3)**

Prerequisite: BA 270 – The course will provide the student with a variety of case problems and marketing situations varied in content and mode of presentation. Cases will deal with all sizes of companies, multinational to small proprietorship products and services; profit and nonprofit organizations. Participants will design and execute a marketing research project as an integral part of their classroom responsibility.

BA 279**Internship Experience (2/2)**

Prerequisite: Completion of 45 credit hours – The student participates in a college-sponsored compensated or non-compensated work experience to receive on-site exposure to various business professions while enrolled in a related program. Concurrently, students participate in seminars which emphasize common work world expectations and occurrences. A major component of the experience will be the interaction between students, instructors, and worksite supervisors as they discuss proper attitudes and behaviors on the job. The student will work a minimum of 100 hours during a semester.

BA 280**Cooperative Education in Business 3 (3/3)**

Prerequisite: Approval of Co-op Coordinator – For students in the third semester of cooperative education. Students participate in a cooperative program of work and learning involving area employers. They work a minimum of 15 hours a week under supervision at approved employment, and their performance is monitored by the instructor. In addition, students are required to attend seminars or develop a project. Students MUST have the permission of the cooperative education coordinator before they register for this course.

BA 282**Organizational Behavior (3/3)**

A survey of factors affecting the ability of an individual to adapt to the human elements in an organization and how these factors impact career mobility. Selected topics include personal and organizational communication, self-esteem, conflict resolution, dealing with diversity, organizational etiquette and tactfulness, influence and office politics, reward systems, stress management, and participation in teams.

BA 283**Business Management (3/3)**

The fundamentals of management: planning, organizing, directing, and controlling.

BA 284**Human Resources Management (3/3)**

The human resources or personnel functions: planning, employment and recruiting, compensation systems, training and development, labor and employee relations, safety and health, benefits and services. The responsibilities of the human resources function and the line person's expectations and working relationship with this unit of the organization are studied.

BA 286**Small Business Management (3/3)**

Prerequisite: BA 103 or business experience – This course emphasizes the managerial considerations involved in establishing a small business and the challenges confronting the entrepreneur. Students will be able to identify entrepreneurial and managerial skills needed to become a successful business manager and/or business owner.

BA 288**Introduction to International Business (3/3)**

Prerequisite: BA 103 or equivalent – Students will examine international business from a truly global perspective. The relationship between business and government will be addressed by reviewing business as well as policy concerns. Students will learn relevant theoretical and practical insights so that the real world international business is better understood.

BA 298**Independent Study in Business Administration 1 (1/1)**

Prerequisite: Permission of instructor – Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of business and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take BA 298. No student may earn more than two credits in independent study.

BA 299**Independent Study in Business Administration 2 (1/1)**

Prerequisite: Permission of instructor – Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of business and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take BA 298. No student may earn more than two credits in independent study.

BI – BIOLOGY

NOTE: For a biology major sequence, BI 151 and BI 152 are recommended rather than a sequence including BI 101.

BI 101**General Biology (4/5)**

A survey of biology that satisfies the general education requirement for biological science with a laboratory for students who do not plan to major in biology. Biology 101 is also an appropriate starting point for students who have not had a recent high school biology and plan to major in biology or enter one of the health care professions. Major topics include the cellular basis of life, cell reproduction and genetics, evolution, biological diversity, and ecology. Three hours lecture, two hours lab per week in a regular semester.

BI 103**General Botany (4/7)**

Prerequisite: Successful completion of BI 101 (or one year high school biology) and CM 103 General Chemistry 1 (or one year high school chemistry) strongly advised – A study of plants, algae, fungi, and bacteria, including classification, anatomy, metabolism, growth and development, genetics, evolution, and ecology. This course satisfies general education requirements for biological science. It may be required for students majoring in biology, crop and soil sciences, forestry, horticulture, and natural resources. Biology majors and others who need a two semester course in general biology are advised to take BI 103 and BI 104. Three hours lecture, four hours lab.

BI 104**General Zoology (4/7)**

A comprehensive survey of the anatomy, physiology, evolution and classification of the Kingdom Animalia and the Protozoa incorporating broad and unifying biological concepts. This course is commonly required for students intending to major in biology, premedical, pre-dental, pharmacy, etc. Three hours lecture, four hours lab. Successful completion of BI 101 or one year of high school biology is highly recommended.

BI 117**General Human Anatomy and Physiology (3/5)**

Structural and functional approach to the human body through study of cells, tissues, and the various body systems. Course fulfills part or all of anatomy and physiology requirements for students enrolled in the areas of home economics, physical education, mortuary science, and is open to students desiring basic knowledge of anatomy and physiology. Three hours lecture, two hours lab. Successful completion of BI 101, or one year high school biology, strongly advised. Three hours lecture, two hours lab per week in a regular semester.

BI 121**Human Anatomy and Physiology 1 (3/5)**

Prerequisite: Grade of "C" or better in high school biology and chemistry or BI 117 and CM 101 – First half of a two semester course.

A structural and functional approach to the human organism with an emphasis on cell biology, energetics, tissues and the integumentary, skeletal, muscular, and nervous systems including neural integration and special senses. This course satisfies general education requirements for biology and is required for medically related fields such as nursing, physical therapy, occupational therapy, physician assistant, etc. Three hours lecture, two hours lab per week in a regular semester.

BI 122**Human Anatomy and Physiology 2 (3/5)**

Prerequisite: Grade of “C” or better in BI 121 – Biology 122 is a continuation of Biology 121. A structural and functional approach to the human organism with an emphasis on the circulatory, lymphatic, respiratory, digestive, urinary, endocrine, and reproductive systems. The course content also includes water, electrolyte and acid-base balance, and human growth and development. Three hours lecture, two hours lab per week in a regular semester.

BI 125**Personal Health (3/3)**

Principles of personal health centering on two independent but related themes: the dynamic multiple dimensions of health, including the physical, emotional, social, intellectual, spiritual and occupational as well as the developmental tasks of college students. The course is designed to expand the student’s knowledge of many health topics. Students will also be able to examine their attitude toward health issues and decide how they can modify their behavior to improve their overall health status and perhaps prevent or delay certain health conditions. The use of videos, visual aids, and health assessments will be incorporated in the class. Three hours lecture per week in a regular semester.

BI 127**General Microbiology (4/7)**

Prerequisite: Successful completion of BI 101 and CM 101 or 1 year of high school biology and chemistry – The content of this introductory course in microbiology has been structured to prepare students with necessary background, data, and experience to enter medically related fields such as: dental hygiene, dental assisting, nursing, medical technology, and physical therapy. Major topics of study include: 1) Techniques for culturing, characterizing, identifying and controlling pathogenic microorganisms; 2) Detailed study of the nature and importance of specified microbial pathogens; 3) The study of human defense mechanism against infectious diseases including the intersection between microbial parasites and the human system of immunity. Three hours lecture, four hours lab per week in a regular semester.

BI 130**Practical Botany (3/4)**

An introduction to horticulture, which is the diverse field of agriculture concerned with intensely cultivated, high value plants that are used for food, medicine, aesthetics, or therapy. Thus, horticulture produces food for substance, food for the eyes and food for the mind. Horticulture’s unique merger of science and art fascinates both the hobbyist and the professional. The course emphasizes the biological principles associated with propagation, establishment, maintenance of ornamentals, fruits, and vegetables in the landscape or home. This course may not fulfill the laboratory science requirement for some baccalaureate institutions. Two hours lecture, two hours lab per week in a regular semester.

BI 151**Cells, Molecules, and Genes (4/6)**

This is the first in a two-semester introductory biology sequence for students who plan to major in the biological sciences or pursue a career in medicine, dentistry, or allied health fields such as pharmacy. The course introduces students to the modern concepts of cellular and molecular biology, genetics, and development with emphasis on the observations and experiments that support them. **Prerequisites:** successful completion of high school biology and chemistry, or successful completion of BI 101 and CM 100, or permission of the instructor. Three hours of lecture; three hours of laboratory.

BI 152**Biological Diversity (4/6)**

Prerequisite: Successful completion of BI 151 – This is the second in a two-semester introductory biology sequence for students that plan to major in the biological sciences or pursue careers in medicine, dentistry, or allied health fields such as pharmacy. The course introduces students to the diversity of living organisms and their anatomy and physiology, as well as, animal behavior, ecology, and the evolutionary processes and patterns that have led to this diversity. Three hours lecture, three hours lab.

BI 201**Studies in Natural History 1 (1/1)**

Prerequisite: Consent of instructor – A combination of lecture, laboratory and field-based experiences introduces the student to the ecology and natural history of selected habitats and ecosystems throughout North America and/or the world. On site visits to the habitats and ecosystems under study allow the student to study the natural history and ecology of the area in detail through first hand observation and/or research projects. The geographical locale and ecosystems visited may change with each course offering. Library research, a scientific paper and/or an oral presentation of a directed research project may be required as part of the course. Note: The cost of food, lodging and transportation will be borne by the student.

BI 202**Studies in Natural History 2 (2/2)**

Prerequisite: Consent of instructor – A combination of lecture, laboratory and field-based experiences introduces the student to the ecology and natural history of selected habitats and ecosystems throughout North America and/or the world. On site visits to the habitats and ecosystems under study allow the student to study the natural history and ecology of the area in detail through first hand observation and/or research projects. The geographical locale and ecosystems visited may change with each course offering. Library research, a scientific paper and/or an oral presentation of a directed research project may be required as part of the course. Note: The cost of food, lodging and transportation will be borne by the student.

BI 203**Studies in Natural History 3 (3/3)**

Prerequisite: Consent of instructor – A combination of lecture, laboratory and field-based experiences introduces the student to the ecology and natural history of selected habitats and ecosystems throughout North America and/or the world. On site visits to the habitats and ecosystems under study allow the student to study the natural history and ecology of the area in detail through first hand observation and/or research projects. The geographical locale and ecosystems visited may change with each course offering. Library research, a scientific paper and/or an oral presentation of a directed research project may be required as part of the course. Note: The cost of food, lodging and transportation will be borne by the student.

BI 204**Studies in Natural History 4 (4/4)**

Prerequisite: Consent of instructor – A combination of lecture, laboratory and field-based experiences introduces the student to the ecology and natural history of selected habitats and ecosystems throughout North America and/or the world. On site visits to the habitats and ecosystems under study allow the student to study the natural history and ecology of the area in detail through first hand observation and/or research projects. The geographical locale and ecosystems visited may change with each course offering. Library research, a scientific paper and/or an oral presentation of a directed research project may be required as part of the course. Note: The cost of food, lodging and transportation will be borne by the student.

BI 207**Ornithology (3/4)**

This course is devoted to the study of birds. More than half of course used for field work. In the field, studies of bird identification, nesting, songs, behavior, and the niche and habitat of specific birds will be covered. Lectures in classroom will be devoted to the study of the anatomy and physiology of birds. Laboratory credit given. Two hours lecture, two hours laboratory.

BI 215**General Ecology (4/6)**

Prerequisites: BI101, BI 103 or BI 104 – Successful completion of MA104 is recommended. This is a general ecology course that is recommended for students majoring in biology, natural resources, forestry, soil science and environmental studies. The course examines populations, communities, ecosystems and biomes through lecture, laboratory and field experiences. Major areas of concentration include the interaction of ecology and evolution, population dynamics, interspecific interactions, community structure, diversity, succession, biomes, primary productivity and energy flow. The course will require the student to use basic mathematical skills since population and community ecology depend on mathematical analysis. Three hours lecture, three hours lab.

BI 232**Non-Laboratory Genetics (3/3)**

Prerequisite: BI 101, 103 or 104 – The study of biologically inherited traits using a historical perspective, from Mendel's peas, Morgan and the chromosomal theory, to modern advances in molecular genetics; Mendelian and non-Mendelian inheritance, including, cytoplasmic inheritance, and environmental influences; DNA structure, replication and organization; protein synthesis and the control of gene expression. Emphasis on human inheritance and genetic diseases; scientific and societal problems of genetic counseling, and eugenics. Three hours lecture per week in a regular semester.

BI 289**Field Zoology (3/4)**

Prerequisite: BI 101, 104, 120 or consent of instructor – A combination of lecture, laboratory and field based experiences introduces the student to the ecology and natural history of the invertebrate and vertebrate animal species of Michigan. On site visits to local aquatic and terrestrial habitats allow the student to study the natural history of Michigan's animal species through first hand observation and research projects. Students will be introduced to wildlife censusing techniques including observation and capture and release techniques. The cost of food/lodging/transportation will be borne by the student. Offered during summer session.

BI 298**Independent Study in Biology 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of biology and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, the appropriate dean before they register for this course. Students electing independent study for the first time should take BI 298. No student may earn more than two credits in independent study.

BI 299**Independent Study in Biology 2 (1/1)**

readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of biology and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, the appropriate dean before they register for this course. Students electing independent study for the first time should take BI 298. No student may earn more than two credits in independent study.

CA – CULINARY ARTS**CA 102****Introduction to the Hospitality Industry (2/2)**

An overview of the hospitality industry as observed through field trips, speakers, and lectures. Management and chef positions in hotels, motels, health care facilities, clubs, restaurants, institutions, industrial plants, and resorts are investigated and studied.

CA 104**Bakery (5/12.5)**

Basic principles of baking are introduced. Students learn to prepare pies, cakes, biscuits, yeast rolls, and doughnuts. Frozen doughs and mixes are introduced. Also, cake decorating techniques.

CA 105**Culinary Arts Skill Development (5/12.5)**

Provides the students with fundamental skills in quantity food preparation. Lectures cover cooking theory and principles and basic menu math and kitchen safety. Hands-on kitchen laboratory introduces the student to knife skills basic cookery methods, stocks, sauces, soups, vegetable preparation, meat preparation, fish preparation, alternative proteins and breakfast cookery.

CA 111**Restaurant Sanitation and Safety (2/2)**

Principles of sanitation, characteristics and causes of food-borne illness; measures to prevent unsanitary conditions and food-borne illness are stressed. Includes kitchen safety and fire prevention. Course completion involves the National Food Service Industry and the Michigan Sanitation Training examinations.

CA 112**Menu Planning and Nutrition (3/3)**

The planning of menus for different types of commercial and institutional food service operations. Layout and design of the printed menu are studied. Each student plans a menu for a restaurant of his/her choice. Basic nutrition for various age groups is presented. The student writes a low-calorie lunch, reads magazines and newspapers to detect food faddism, and learns to interpret food and food supplement nutrition.

CA 114**Food Production (5/12.5)**

Prerequisite: CA105 – Students learn principles, procedures, and standards of quantity and institutional-style cooking. Students prepare entrees, soups, salads, sandwiches, and vegetables for the College's public restaurant, The Heritage. The proper use of tools and equipment is emphasized.

CA 115**Table Service (5/12.5)**

Prerequisite: CA 105 – Principles of American table service are studied and practiced in the College's public restaurant, The Heritage; includes dining room management, customer relations, and an exploratory introduction to several other types of table service.

CA 124**Retail Baking (5/12.5)**

A laboratory based course featuring production techniques unique to the fast growing in-store deli/bakery industry. Frozen breads, rolls, cookies, Scoop'n Bake muffins, cookies and scratch bag products particular to the retail bakeshop environment will be demonstrated. Point of sale and finishing techniques are highlighted. Also includes training in inventory control, loss prevention and equipment cleaning and maintenance.

CA 135**Buttercreme Cake Decorating Basics (2/2)**

A hands-on study in decorating and finishing techniques for baked products with specific instruction on buttercreme borders, flowers, flower sprays, writing styles, garland, figure piping and string work. Exposure to the industry uses of image transferring machines and air brushing will be given. Instruction will also be given in the production of icing and filling layer cakes and sheet cakes. Exposure to the industry's current accessories, novelties, tools, equipment and packaging will be provided.

CA 136**Intermediate Buttercreme Cake Decorating (2/2)**

Prerequisite: CA 135 or permission of the instructor – Using basic skills already acquired, this course will be a continuation of a hands-on study in the application of buttercreme with specific instruction in border variety and color accents incorporating three or more different flowers in a visually appealing flower spray formation. Enhancement of current writing skills in regard to message placement, size, flair, creativity, efficiency in the use of image transferring machines and air brushing color application will be taught. Instruction will also be provided in the production and assembly of specialty theme cakes and a two-tier traditional wedding cake.

CA 137**Buttercreme Wedding Cakes (2/2)**

Prerequisite: CA 135 or 136 or permission of the instructor – A hands-on study in the production of three different wedding cake themes—Traditional, Country, and Victorian—with specific instruction in theme creation by the use of buttercreme flowers, hearts, lace, ruffles, borders, lattice and string work. Exposure to the industry's various tier separators, fountains and stands, wedding accessories and novelties will be studied. Instruction will be provided in utilizing strategies for planning, ordering, preparing, storing, assembling and safe transportation of a wedding cake.

CA 138**Introduction to Gum Paste, Rolled Fondant, and Royal Icing (2/2)**

A hands-on introduction in current cake finishing techniques using the decorating media of gum paste and rolled fondant. The student will establish familiarity with the tools and equipment particular to this skilled environment. Production of royal icing flowers and rolled fondant cakes will be required. Instruction in the creation of floral centerpieces with the use of natural and artificial materials, along with the use of the airbrush for color accents will be explored. Accent techniques such as over-piping, brush embroidery, filigree, painting, crimping and embossing will be introduced.

CA 140**Hospitality Forms and Formulas (4/4)**

Prerequisite: MA 003 or equivalent – A course to introduce the forms and formulas specific to the hospitality industry. Topics include dry/liquid units of measure, metric measures, recipe costing and pricing, butcher's yield tests, baker's percentages, recipe conversion, budgets, ledgers, and breakeven analysis. Students will use forms and formulas similar to those used in managing food service operations.

CA 150**Gourmet Cooking (3/4)**

Techniques involved in planning, preparing, and serving gourmet and ethnic meals. Emphasis is placed upon the use of herbs and spices, wines and liqueurs, and special cooking techniques which will change ordinary food into culinary delights.

CA 151**Introduction to Wine (2/2)**

Familiarizes students with selected wines of France, Germany, Italy, and the United States, emphasizing those served in public dining establishments; includes history, label interpretation, wine laws, vocabulary, processing methods, demonstrations of proper service and decanting, and tastings of imported and domestic wines.

CA 152**International Cooking (2/2)**

Students learn to prepare major food specialties representative of several different countries and geographical regions. They study the cuisine and learn related cultural information about each nationality. The class meets in four hour sessions for eight weeks and involves some lecture-discussions as well as actual supervised food preparation in one of the College's laboratory kitchens.

CA 153**Understanding Food and Wine (3/3)**

Introduces the concepts of domestic and international food preparation and wine knowledge. The lecture/demonstration format will focus on cooking techniques as well as individual recipes. Sampled food items will be paired with wines from the world's major wine regions. Food topics include tasting skill, labeling terminology, retail purchasing, storage, and production techniques.

CA 154**Preparing Appetizers (2/2)**

Students will learn about the four main categories of appetizers, including: cold hors d'oeuvres, hot hors d'oeuvres, zakuskis and canapes. Various techniques of food preparation will be emphasized as students produce an extensive menu of appetizers during each class session.

CA 158**Cuisines of Asia (2/2)**

An overview of the distinct gastronomical regions; discussion with regard to the influence of ingredients, economy, geography, religion, customs, culture, agriculture and aquaculture have on Asian cuisine. Students will prepare and sample foods from the various regions studied using the indigenous ingredients and traditional methods of preparation. The focus of the course will be on the cuisines of China, India, Vietnam, Thailand and Korea.

CA 160**Ice Carving Basics (2/2)**

The student will be introduced to the basics of ice carving. This course will include the safety procedures involved in ice carving, the tools and equipment used in making and carving ice and the basic skills needed to carve ice. Upon completion the student will be able to carve an identifiable carving using one standard block of ice.

CA 180**Cooperative Education In Culinary Arts (3/3)**

Prerequisite: CA 104, 105, or 124 and prior written approval of Co-op Coordinator – Students participate in a cooperative program of work and learning during the summer involving area employers. They work a minimum of 240 hours under supervision at approved employment, and their performance is monitored by the instructor. Restricted to Culinary Arts, Culinary Management, and Baking and Pastry Arts majors.

CA 200**Hospitality Management (3/3)**

A study of specific duties, knowledge, and skills required of managers in the hospitality industry; fundamentals of management planning, organizing, staffing, direction, and control.

CA 201**Food Service Cost Controls and Financial Analysis (3/3)**

Students learn to construct a food-service profit and loss statement, line by line, and the cost control practices associated with each line. The relationships among sales, costs, and profits are emphasized. The student will learn how to calculate and use the breakeven analysis and cash flow analysis as they apply to the food-service industry. An understanding of how properly to forecast sales and budget costs in the food-service industry is provided.

CA 204**Pastry (5/12.5)**

Prerequisite: CA 104 – Students learn advanced pastry skills, with increased production requirements. Techniques in cake decoration, French pastry, European tortes, croissants, Danish and frozen desserts are taught. Advanced sugar work techniques are introduced. Students develop their practical skills while providing pastry items for campus food service facilities.

CA 205**Banquet and Catering (5/12.5)**

Prerequisite: CA 105 and CA 114 or 115 – Students learn the practical skills of buffet catering and banquet organization, by service in off- and on-premise catering operations. Emphasis on organization, preparation, service and meal experience will be covered. Techniques in charcuterie and cold food decoration as well as ice carving are studied.

CA 209**Principles of Food Preparation (3/3)**

A lecture/demonstration class emphasizing principles involved in the preparation of food. Demonstrations will show the influences of variable factors on finished products and illustrate specific techniques. Students learn to recognize a standard product and the critical steps in its production.

CA 212**Food Purchasing (2/2)**

The purchasing practices and controls that help to insure a correct product specification. Products include cheese, leafy greens, canned fruits and vegetables, and convenience foods. Proper forms for ordering, issuing, inventory and cost controls are used.

CA 224**Bakery/Deli Operations (5/12.5)**

Students develop management and operational skills in hands-on training centers using a systems approach. Skills developed include food, beverage and labor cost controls, scheduling, cash control, inventory management, training methods, communication, computer aided management, and equipment maintenance necessary to plan, manage and evaluate retail deli, banquet and restaurant operations. Students receive training in food preparation and service for retail and banquet operations.

CA 234**Hospitality Marketing (3/3)**

A practical study of the principles of marketing as applied in today's hotel-motel and restaurant industry. Includes product and market analysis, organization of a sales team, techniques of selling, sales promotion, advertising, public relations and marketing management. Guest speakers and field trips are featured aspects of the course.

CA 235**Beverage Management (2/2)**

Introduces the methods for identification, management and control of those beverages used in the hospitality industry. The course will include lectures and tastings of the actual products. Topics will include wine production, grape varieties, production areas, label interpretation, wine laws, service methods, and controls. Nonalcoholic beverages will be discussed; topics include coffee and tea production, identification and service as well as soft drinks.

CA 236**Bar Management (2/2)**

Acquaints students with proper beverage production, service, and financial and inventory controls necessary for profitable restaurant/bar operations. Legal liabilities pertaining to alcoholic beverage service are discussed using recent lawsuits as case studies.

CA 238**Computer Applications in Food Service (2/2)**

Prerequisite: CO 101 or permission of the instructor – A lecture/demonstration course designed to familiarize students with specific applications of computer programs for use in food-service operations. Students receive hands-on instruction and complete assignments using selected software programs.

CA 244**Advanced Food Production (5/12.5)**

Prerequisite: CA 105 and CA 114 –

Students learn classical food preparation preparing meats, game, stocks, and sauces. In addition, students further develop their skills in garde manger and world cuisines. They learn to prepare foods “a la minute.” Other areas covered include the preparation of foods for different dietary needs, recipe construction and costing.

CA 245**Advanced Table Service (5/12.5)**

Prerequisite: CA 115 – Students learn table side preparation of entrees, desserts, and coffees. American as well as French table service, wine service, and menu merchandising are stressed throughout. Guest relations and timing of service are also emphasized as advanced students serve dinner to guests in The Heritage Restaurant.

CA 250**Nutrition (3/3)**

This course is designed to enable the student to learn to apply knowledge of nutrients to all major phases of the food cycle. Topics include weight control, food faddism, the athlete's diet, nutrition and cancer, fats and arteriosclerosis, nutrition and alcohol, high potency vitamin use and others.

CA 275**Food and Society (3/3)**

Explores the connection between food and society. Using disciplinary reference material, students will review studies from nutrition, anthropology, medicine, history, psychology, political economy and sociology. Students will explore contemporary interactions of food and society, including the relationship between culture and technology, society and human values and their influence on what we eat.

CA 280**International Studies in Cuisine and Culture (3/3)**

A study of the modern day foodservice of a foreign country. Students will examine the geographical, religious, social and economic influences on a country's cuisine. Emphasis will be placed on researching the aquaculture, agriculture, and viniculture of the regions being studied. An instructor-led study tour of the foreign country, by the students, is an essential requirement of the course. A travel fee will be assessed to cover related expenses.

CA 298**Independent Study in Culinary Arts 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of culinary arts and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take CA 298. No student may earn more than two credits in independent study.

CA 299**Independent Study in Culinary Arts 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of culinary arts and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take CA 298. No student may earn more than two credits in independent study.

CD – CHILD DEVELOPMENT

NOTE: Students participating in Child Development Lab classes are required to complete the Central Registry Check for substantial abuse and neglect through the Family Independence Agency. Child Care Licensing requires that students submit their letter of clearance prior to beginning lab participation. The required forms are available through the Child Development office and the GRCC Lab Preschool.

CD 105**Foundations of Early Childhood Education (3/3)**

An introduction to the field of early childhood education from infancy through school-age. Topics include: child development and learning, health, safety and nutrition, family and community collaboration, teaching and learning, assessment, observation and documentation, professionalism administration and program management, and communication and guidance.

CD 116**Families, Intimate Relationships, and Human Sexuality (3/3)**

An interdisciplinary approach to the study of marriage, human sexuality, and family functioning. Provides a basis for making decisions about lifestyles and sexual choices in contemporary society. Emphasis is placed on changing roles, love, intimacy, communication and sexuality throughout the family life cycle.

CD 118**Human Growth and Development 1 (4/5)**

This course focuses on the study of the total person from conception through adolescence, including stages and considerations in adult development. Emphasis is on observing and analyzing physical, cognitive, language, and social-emotional development. The course requires two hours per week of laboratory experience with children. Three hours lecture per week and two hours of laboratory. Credit will not be granted for both PY 232 and CD 118.

CD 119**Methods in Preschool Education (4/6)**

Prerequisite: CD 118 with a grade of “C-” or better – This course focuses on the development and implementation of a developmentally appropriate curriculum for preschool children. Each student will be assigned a lab instructor at the GRCC Lab Preschool who will assist with and evaluate weekly activities and a final teaching session planned and implemented by the student. Three hours of lecture and three hours of lab participation at the GRCC Lab Preschool.

CD 120**Adult Development (3/3)**

Prerequisite: CD 118 – The major emphasis is on normal adult development, ages 18 through old age. Focus is on biological, cognitive, social and occupational aspects of research methods and interview techniques.

CD 180**Cooperative Education in Child Development 1 (3/3)**

Prerequisite: Completion of CD 118, CD 119 or CD 210 with a grade of “C-” or better – CDA students participate in a cooperative program of work and learning involving area employers. Students are required to work a minimum of 225 hours a semester under a qualified supervisor at approved employment and attend scheduled class sessions.

CD 181**Cooperative Education in Child Development 2 (3/3)**

For students in the second semester of cooperative education. Students participate in a cooperative program of work and learning involving area employers. They work a minimum of 15 hours a week under supervision at approved employment, and their performance is monitored by the instructor. In addition, attendance is required at a one hour a week seminar.

CD 210**Infant/Toddler Development (4/5)**

Prerequisite: Completion of CD 118 with a grade of “C-” or better – The focus of this course is on the physical, sensory and perceptual, cognitive, language, social and emotional development in the child from birth to 2 1/2 years. The emphasis is on caregiver skills, curriculum planning, and environmental structuring to enhance and stimulate development in in-home and group-care settings. Three hours lecture, two hours lab.

CD 215**Adult/Child Interaction (3/3)**

Practical application of current research to adult/child interactions. Theories, problems, and techniques of adult/child interactions will be explored with an emphasis on solving problems in adult/child relationships.

CD 218**Preschool Management (3/3)**

Prerequisite: Completion of CD 118, CD 119 or CD 210 with a grade of “C-” or better – Focus is on the role and responsibilities of an early childhood program director and on the skills and knowledge necessary to be successful as a director. Topics include teamwork, leadership, standards of quality, health and safety, relationships with parents, budgeting, space, schedule and equipment, staff hiring and supervision, and professionalism.

CD 230**Young Children with Special Needs (4/5)**

Prerequisites: Completion of CD 118, CD 119 or CD 210 with a grade of “C-” or better – Introduction to handicapping conditions in early childhood education. Emphasis is on assessment, diagnosis and lab participation in a special education setting. Working with children in selected special education programs is required. Three hours lecture, two hours lab arranged off campus.

CD 260**Emergent Literacy (3/3)**

Prerequisite: Completion of CD 118 with a grade of “C-” or better – This course focuses on literacy acquisition theory and practice from 0 to 3rd grade. Literacy development stages, factors that effect reading acquisition, and characteristics of fluent readers are included. The importance of play, schema theory, language development and reading acquisition, and assessment procedures are stressed.

CD 280**Cooperative Education in Child Development 3 (3/3)**

Prerequisites: Completion of CD 118, CD 119 or CD 210 with a grade of “C-” or better – Associate degree students participate in a cooperative program of work and learning involving area employers. Students are required to work a minimum of 225 hours a semester under a qualified supervisor at approved employment.

CD 285**Assessment Tools in Child Development (2/2)**

Prerequisites: Completion of CD 118, CD 119 or CD 210 with a grade of “C-” or better – Students develop a portfolio and discuss the challenges of their work experience. The portfolio includes a resume, autobiography, CDA Competency Statements, CDA Resource File, a sample of a child's portfolio, and documentation of the student's own teaching and educational experience.

CD 298**Independent Study in Child Development 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of child development and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take CD 298. No student may earn more than two credits in independent study.

CD 299**Independent Study in Child Development 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of child development and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take CD 298. No student may earn more than two credits in independent study.

CJ – CRIMINAL JUSTICE**CJ 105****Introduction to Corrections (3/3)**

A study of the history, philosophy, process, and services of community-based corrections, including probation, parole, halfway houses, and other sentencing alternatives. Pre-sentence investigation and sentencing practices are also examined.

CJ 110**Introduction to Criminal Justice (3/3)**

Survey of agencies composing the criminal justice system: primarily the police, courts, and corrections. Introduction to philosophical and historical backgrounds; development of systems, services, and agencies; analysis of criminal justice programs.

CJ 111**Criminology (3/3)**

Social-psychological perspective on crime. Historical and current theories of the causes of criminal behavior will be examined. Various crimes such as white collar, violent sex, and victimless crimes will also be studied.

CJ 115**Client Growth and Development (3/3)**

Examination of the psychological, social, and environmental causes of criminal behavior in juveniles and adults, the impact of psychological, substance abuse, sexual, and medical problems of offenders, and intervention strategies used in institutional and community settings.

CJ 122**Spanish for Criminal Justice (3/3)**

A practical course designed for Criminal Justice students stressing vocabulary, basic sentence structure and conversational drills. This course will teach students to participate in everyday conversations with Spanish speakers, while at the same time guiding them through various Criminal Justice related activities. This course will also cover various aspects of the Hispanic culture. (Course is appropriate for Law Enforcement, Public Safety, Correction, Parole, Firefighters, and Court officers and students)

CJ 140**Juvenile Delinquency (3/3)**

An examination of the nature, extent and causes of juvenile delinquency. Special attention will be focused on the role of the family and other social institutions in delinquency.

CJ 145**Juvenile Corrections (3/3)**

A detailed examination of the justice process for juveniles, including an analysis of the structure and function of juvenile court; the role and practice of probation, detention, parole, diversion for child offenders, the nature of juvenile crime, and society's reaction to it. Recommendations for future juvenile correction programs will be studied.

CJ 150**Introduction to Traffic (3/3)**

Introduction to the principles and practice of traffic enforcement and control. Detailed examination of Michigan motor vehicle law, driver licensing and driving liability; discussion of traffic problems relating to alcohol and drugs, with practical exercises in the detection of alcohol and drivers.

CJ 151**Traffic Accident Investigation (2/2)**

Prerequisite: CJ 150 – Principles and practices of traffic accident reporting and investigation. Students learn to measure, sketch, collect evidence, and interview witnesses in the field.

CJ 152**Police Driving Techniques (2/2)**

Students learn the techniques used in police precision and pursuit driving. Observation and monitoring of traffic are explored as well as the stopping of vehicles and the control of occupants. Emphasis on field driving and practice of learned techniques. Includes MCOLES objectives.

CJ 165**Police Physical Training (2/4)**

Prerequisite: Enrollment in Law Enforcement Certification Program – Introduction to and practice of the techniques of physical fitness necessary in law enforcement. Health, diet, exercise and life span fitness are emphasized. Boxing, swimming and use of the police baton are also explored. Successful scores of the MCOLES obstacle course and physical tests are required to pass this course. Includes MCOLES objectives.

CJ 166**Police Defensive Tactics (2/4)**

Prerequisite: CJ 165 Police Physical Training and enrollment in Law Enforcement Certification Program – The techniques of unarmed self-defense used by law enforcement officers. The practical aspects of mechanics of arrest and search are studied. Students must demonstrate proficiency in the MCOLES defensive tactics techniques in order to pass this course.

CJ 175**Use of Firearms (3/3)**

Introduction to lethal police weaponry and policies, tactics, and the liabilities of its use. Students perform practical exercises using the police revolver and are required to qualify with a revolver on a police range.

CJ 216**Client Relations in Corrections (3/3)**

An examination of the social and psychological formation of attitudes, their cultural influences, and impact on minority perceptions. Discriminatory implications and professional responses in corrections will also be considered.

CJ 221**Correctional Institutions (3/3)**

A study of state and federal prisons and jails, including their history, purpose, treatment/punishment effects, organizational structure, and security requirements. Effects of incarceration on the inmate and society, capital punishment and the role of the correctional officer are also scrutinized.

CJ 235**Criminal Law (3/3)**

Study of the historical sources, development, elements and limitations of substantive criminal law. Introduction to constitutional, criminal, civil, juvenile, and evidence law and their applications in the court system and society.

CJ 236**Procedural Law (3/3)**

Introduction to the rules, laws, and procedures governing arrest, admissions, confessions, search, and seizure. Testimony, case critique, warrant request and preparation are examined in detail.

CJ 237**Legal Issues in Corrections (3/3)**

An introduction to the laws and procedures regarding Federal and State constitutional rights, criminal case processing, court organization, and prisoner rights.

CJ 241**Criminal Investigation 1 (3/3)**

Students learn the investigative techniques associated with criminal offenses. Practical procedures involved in interrogation, arrest, and searches are studied. Police report writing as well as radio and telephone communication are learned.

CJ 242**Criminal Investigation 2 (3/3)**

Examination of scientific methods used in the search, collection, and processing of crime scene data. Practical exercises in fingerprinting and crime scene recordings are also performed. Specific kinds of crimes such as homicide, auto theft, sexual assault, child abuse, narcotics and crimes involving explosive devices are studied.

CJ 243**Methods of Interviewing (3/3)**

An introduction to the techniques of interviewing for use in obtaining information, diagnosis, counseling, and job seeking with special emphasis for law enforcement and corrections personnel. Class includes role playing and group discussion.

CJ 245**Substance Abuse (3/3)**

A study of the nature and extent of drug abuse, including social and legal responses to the problem. The psychological and physiological effects of hallucinogens, marijuana, stimulants, depressants, deliriants, narcotics, and over-the-counter drugs will be studied in detail.

CJ 246**Alcohol Use and Abuse (3/3)**

An analysis of past and present patterns of alcohol use and abuse, including causes (physiological and medical), legal system implications, family and societal impact, and treatment methodologies.

CJ 253**Patrol Operations 1 (3/3)**

Students learn police policy, laws pertaining to civil rights and human relations, interpersonal skills and cultural diversity issues required in law enforcement. The mastery of this content is required for Michigan Commission of Law Enforcement Standards (MCOLES) certification. A continuation of this course is CJ 257.

CJ 255**Advanced First Aid (3/3)**

Students learn the principles and techniques of emergency first aid, cardiopulmonary resuscitation, and the extrication and transportation of injured persons. Emphasis is on practical applications of learned skills. Students who successfully complete this course will receive American Red Cross Emergency Response Card.

CJ 257**Patrol Operations 2 (3/3)**

Students learn types of police patrol, preparation for patrol area checks, how to deal with juvenile offenders, civil disorder, domestic violence, tactical operations; how to handle hazardous materials and explosive devices. The mastery of this content is required for Michigan Commission of Law Enforcement Standards (MCOLES) certification. This course is a continuation of CJ 253.

CJ 270**Issues in Corrections (3/3)**

Students will study current events, issues and changes in the Adult and Juvenile Court and Corrections Systems. Topics will include the criminal justice system integration, courtroom testimony, domestic violence, female criminal behavior, child abuse, funding issues, psychodynamic intervention, ethical responsibility and cultural awareness.

CJ 281**Criminal Justice Internship 1: Corrections/Youth Services (3/3)**

Criminal Justice credit for supervised, on-the-job training monitored by the instructor in approved places of employment. Individuals who elect this course must be employed by a criminal justice agency either full time or part time. Students will be required to maintain a log of activities and submit a report at the end of the semester.

CJ 282**Criminal Justice Internship 2, Corrections/Youth Services (3/3)**

Criminal Justice credit for supervised, on-the-job training monitored by the instructor in approved places of employment. Individuals who elect this course must be employed by a criminal justice agency either full time or part time. Students will be required to maintain a log of activities and submit a report at the end of the semester.

CJ 285**Criminal Justice Practicum 1 (3/3)**

Criminal Justice credit for individuals who will be given supervised, non-salaried positions as observers with various criminal justice agencies. Students will be required to maintain a log of activities and submit a report at the end of the semester. All activities are monitored by the instructor.

CJ 286**Criminal Justice Practicum 2 (3/3)**

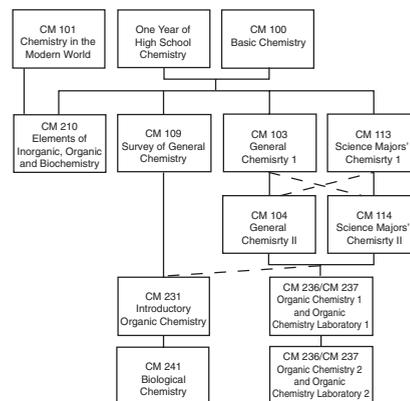
Criminal Justice credit for individuals who will be given supervised, non-salaried positions as observers with various criminal justice agencies. Students will be required to maintain a log of activities and submit a report at the end of the semester. All activities are monitored by the instructor.

CJ 298**Independent Study in Criminal Justice 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of criminal justice and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take CJ 298. No student may earn more than two credits in independent study.

CJ 299**Independent Study in Criminal Justice 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of criminal justice and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take CJ 298. No student may earn more than two credits in independent study.

CM – CHEMISTRY

————— Recommended Sequence

- - - - - Optional Sequence

CM 103 and CM 104 or CM 113 and CM 114 constitute a one-year sequence in general chemistry.

CM 109 (or CM 103 and CM 104), CM 231 and CM 241 fulfill the chemistry requirements for many transfer institutions granting a BSN.

CM 103 and CM 104 or CM 113 and CM 114 constitute a one-year sequence in general chemistry.

CM 109 (or CM 103 and CM 104), CM 231 and CM 241 fulfill the chemistry requirements for many transfer institutions granting a BSN.

CM 100**Basic Chemistry (3/3)**

A normally non-transferable, non-laboratory course designed to prepare students for CM 103, 109 or 210. Topics include measurement, the periodic table, modern atomic theory, chemical bonding, and quantitative relationships in chemistry. Three hours lecture.

CM 101
Chemistry in the Modern World (4/6)

Chemistry for non-science majors and some medical curriculum students designed to give students a better understanding of the relationship between science, technology, and the environment. Topics include chemical reactions, energy, organic chemistry, nuclear chemistry, acids and bases, and biochemistry. Four hours lecture/two hours lab.

CM 102
Introduction to Chemical Technology (1/1)

This course provides an overview of Chemical Process Industries and Chemical Technology with focus on the role of the process operator and the chemical technician. Introduces concepts of safety, regulation, laws affecting the job and the industry, and quality control. Includes study skills and attitudes necessary for study of science/technology as well as means of continuing professional and personal growth. One hour lecture.

CM 103
General Chemistry 1 (4/7)

Prerequisite: CM 100 or equivalent, and MA 104 – Fundamental laws and principles in chemistry. This course is intended for students with a high school background or equivalent in chemistry. Topics include atomic and molecular structure, states of matter, reaction types, stoichiometry, solutions, and thermodynamics. Four hours lecture, three hours lab.

CM 104
General Chemistry 2 (4/7)

Prerequisite: CM 103 or CM 113 – Fundamental chemical concepts and principles of chemistry. Topics include kinetics, equilibrium, acids/bases, electrochemistry, nuclear chemistry, coordination chemistry, and a brief introduction to organic and biochemistry. Four hours lecture/three hours lab.

CM 109
Survey of General Chemistry (5/7)

Prerequisites: MA 107 or equivalent, CM 100 or equivalent – CM 109 serves baccalaureate medical curriculum students and polymer technology students as a one semester survey of the fundamental laws and concepts in chemistry. Topics covered include atomic and molecular structure, phases of matter, solutions, stoichiometry, thermodynamics, equilibrium, acid-base reactions, oxidation-reduction reactions, kinetics, and nuclear chemistry. The concepts of this course will be explored via lecture and laboratory experience. Five hours lecture, two hours lab.

CM 113
Honors Chemistry (4/7)

Prerequisites: 'A' or 'B' grade in high school chemistry; MA 107, MA 108 or equivalent – Intended for students majoring in science or engineering who have an excellent background in theory and practice (lab) from high school chemistry. This course will help students gain more depth and understanding in topics such as: the fundamental laws and principles in chemistry, atomic and molecular structure, bonding, intermolecular forces, phases, solutions, stoichiometry, and thermodynamics. Laboratory emphasis is on quantitative methods. Four hours lecture, three hours lab.

CM 114
Science Majors' Chemistry 2 (4/7)

Prerequisites: CM 113 or completion of CM 103 with a grade of 'A' – Continuation of CM 113. Topics include thermodynamics, equilibrium, acids and bases, redox chemistry, electrochemistry, kinetics, and nuclear chemistry. Four hours lecture/three hours lab. Offered Winter semester only.

CM 210
Inorganic, Organic, and Biochemistry (4/6)

Prerequisite: high school chemistry with a grade of B or better or completion of CM 100 or CM 101 – Selected topics from inorganic chemistry are covered (measurement, bonding, acid/base theory and chemical reaction). A study of the major classes of organic and biochemical molecules with a focus upon chemical and physical properties and their relation to the health professions. Four hour lecture, two hour lab.

CM 212
Quantitative Chemical Analysis (5/9)

Prerequisite: CM 104 or CM 114 and MA 131 – A rigorous course that delves into quantitative methods of chemical analysis. Classical wet chemistry techniques and volumetric and gravimetric methods of analysis are explored via lecture and laboratory experiences. Electrochemical and spectrochemical methods and gas and liquid chromatography are introduced. Three hours lecture/six hours lab.

CM 231
Introductory Organic Chemistry (4/5.5)

Prerequisite: CM 109, CM 104 or CM 114 – An introduction to organic chemistry; topics include the classes of organic compounds, reactions, synthesis and mechanisms. Four hours lecture, one and one-half hours lab.

CM 236
Organic Chemistry 1 (4/4)

Prerequisites: CM103 or CM 113 and CM 104 or CM 114 with a 2.0 GPA or higher – Chemistry 236 is the first part of a two semester sequence for those students who require a full year of organic chemistry. In this course, students will be introduced to the fundamental language and roles of organic chemistry, then begin a systematic study of functional groups. Nomenclature, stereochemistry, and how physical properties, chemical structure and chemical reactivity are interrelated will be covered along with an introduction to reaction mechanisms. The use of spectroscopy will be introduced as a means of structure determination. Many transfer institutions also require CM 237, Organic Chemistry Laboratory 1.

CM 237
Organic Chemistry Laboratory 1 (1/4)

Prerequisite or co-requisite: CM 236 or equivalent – Chemistry 237 is the first part of a two-semester sequence for those students who require a full year of organic chemistry lab. In this course, students will be introduced to basic organic laboratory techniques, including extraction, distillation, chromatographic techniques, and synthetic methodologies. The use of spectroscopy will be introduced as a means of structure determination.

CM 238**Organic Chemistry 2 (4/4)**

Prerequisites: CM 236 with a 2.0 GPA or better – Chemistry 238 is the second part of a two-semester sequence for those students who require a full year of organic chemistry. In this course, the systematic study of organic functional groups will be continued. Nomenclature, stereochemistry, and how physical properties, chemical reactivity are interrelated continue to be covered with an emphasis on understanding and writing reaction mechanisms. Many transfer institutions also require CM 239, Organic Chemistry Laboratory 2.

CM 239**Organic Chemistry Laboratory 2 (1/4)**

Prerequisites: CM 237 with a 2.0 GPA or higher – Chemistry 239 is the second part of a two-semester sequence for those students who require a full year of organic chemistry lab. The laboratory techniques and problem solving skills acquired in CM 237 will be applied to more complex reaction systems. Spectroscopy will be applied to structure determination and unknown analysis.

CM 241**Biological Chemistry (4/5.5)**

Prerequisite: CM 231 – An introductory course in biochemistry. Emphasis is placed on the structure and function of biochemicals found in and utilized by human. Topics include buffers, carbohydrates, proteins, lipids, nucleic acids, protein synthesis, bioenergetics, enzymes and metabolism. Four hours lecture, one and one-half hours lab. Offered Fall and Winter semesters.

CM 252**Polymer Chemistry (3/4)**

Prerequisite: CM 231 or CM 266 – Topics will include polymer architecture, step and chain growth polymerization, polymer stereochemistry, thermal properties and analysis, and methods of molecular weight determination. The concepts of this course will be explored through lecture and laboratory experiences. A prior knowledge of organic chemistry is assumed. Two and one-half hours lecture, one and one-half hours lab.

CM 260**Hazwoper for Industrial, Lab and Environmental Workers (3/3)**

Hazwoper for chemical technicians, industrial workers, emergency responders, and environmental field workers. Topics include introduction to chemical safety, air monitoring, and overview of OSHA and EPA regulations, personal protective equipment, drum transfer and over-packing, chemical storage, and handling.

CM 282**Instrumental Analysis (5/9)**

Prerequisites: CM212 – This course will cover the principles and applications of analytical instrumentation. Topics include spectroscopy, electroanalytical chemistry, separation methods, and thermal analysis. Three hours lecture, six hours lab.

CM 298**Independent Study in Chemistry 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of chemistry and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take CM 298. No student may earn more than two credits in independent study.

CM 299**Independent Study in Chemistry 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of chemistry and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take CM 298. No student may earn more than two credits in independent study.

CO – COMPUTER APPLICATIONS**CO 101****Introduction to Computer Applications (2/2)**

General understanding and operation of personal computers. Productive ways that computer systems can be used are demonstrated. Students are assumed to have little or no previous computing experience. Assignments are completed on selected computers using available computer software packages including word processing, graphics, electronic spreadsheet, and file management.

CO 102**Introduction to Integrated Software (2/2)**

Prerequisite: CO 101 – Students learn the various dimensions of an integrated software package. Emphasis is on the use of databases to manage information such as registration for a conference, inventory management, maintenance of a collection. Students use other components of the software to produce supporting documentation such as publicity, name badges, cost analysis, and report writing. File management is also covered. Offered all semesters.

CO 105**Windows Operating System (2/2)**

Prerequisite: CO 101 – Students learn operations and basic features of a Windows Operating System to enhance productivity when using a computer to run applications. Using an IBM compatible computer, students control windows, manage programs, work with directories and files, use accessories, transfer data between applications, manage printing, perform disk maintenance and customize Windows environment. Offered all semesters.

CO 110**Introduction to Computer Information Systems (3/3)**

Study of the fundamentals of working with computers and Information Systems in business organizations. The course starts with hardware, software, data, procedures, and personnel. It progresses to information system components: transaction processing, management reporting, decision support and executive support systems. Emphasis is on how information systems employees and the rest of the organization must work together to compete in an information-based society.

CO 116**Introduction to Programming (3/3)**

Prerequisite: CO 101 recommended –

Introduction to computer program writing for those who have never programmed, including definitions, problem solving, the programming process, and program design tools. After solid preparation, students begin to write actual programs in a structured pattern of modules, including detail modules from a program library. This course emphasizes the importance of design and coordinating procedures to accomplish programming objectives. Using QBASIC, this course readies students for an easy transition to high level languages.

CO 117**Introduction to Programming Using Java (3/3)**

Prerequisite: CO 116; **Introduction to Programming Logic**, or knowledge of another programming language is very helpful –

Introduction to Programming Using Java teaches programming fundamentals using the Java language programming with an emphasis on problem solving techniques. Each assignment will have a graphical user interface design with appropriate controls. Events for controls will be coded in Java. Assignments will be based on scientific, mathematical, and business themes. This class introduces students to object oriented programming (OOP) in an online environment. Java is the most widely used language on the Internet.

CO 120**Using Graphics Software (2/2)**

Prerequisite: CO 101 – Students are introduced to drawing techniques for both raster and vector images. Projects include illustration, typesetting, identity graphics and fine arts. Classes are offered on both Macintosh and IBM platforms.

CO 122**Computerized Illustration (2/2)**

Prerequisite: CO 120 – Students use computer graphics media for creating illustrations and analyzing design alternatives; or using current graphic software, students evaluate, model and render two-dimensional images, black and white as well as color. Projects include technical drawings, advertising layouts, and fine art illustrations. Prior graphic design background and experience using a computer with a graphical tool set beneficial. Lab fee.

CO 124**VISUAL BASIC Programming (3/3)**

Prerequisite: CO 116 recommended –

Fundamentals of VISUAL BASIC language programming with an emphasis on problem-solving techniques. Each assignment will have a graphical user interface design with appropriate controls. Events for controls will be coded in VISUAL BASIC. Assignments will be based on scientific, mathematical, and business themes. VISUAL BASIC is one of the most widely used languages on personal computers. Lab fee.

CO 127**C/C++ Programming (3/3)**

Prerequisite: Experience with another computer programming language – Fundamentals of C/C++ programming, including IDE commands, arithmetic expressions, variable types, input/output statements, logical operators, looping, functions and an introduction to object-oriented programming concepts. This language is portable and particularly suited for applications programming. CO 127 (C/C++) and MA 121 (FORTRAN) are the programming courses at GRCC that meet basic requirements for engineering curriculums. Please check with transfer institutions to determine if you need one or both of these courses. MA 121 can serve as a prerequisite for CO 127. Three hours lecture/lab combination.

CO 129**Introduction to C# Programming (3/3)**

Students will learn how to code using C#, a language that is designed specifically for programming Microsoft's .NET Framework. Students will study the fundamentals of C# language from the ground up, design and write object-oriented programs, and become familiar with .NET programming. Topics include C# console structure, flow control, variable declaration, functions, and object oriented concepts.

CO 132**UNIX Operating System (2/2)**

Prerequisites: CO 105 and a programming language – The UNIX Operating System for control of multi-user computer networks is studied. Students learn to use basic UNIX commands to send e-mail, use the UNIX Editor and introductory Shell Programming.

CO 140**Multimedia Presentations (2/2)**

Prerequisite: CO 101 – Students learn to create attention-holding presentations using computer software designed for this purpose. As "information age" workers, students focus on the effective communication of ideas and information. Using a common design, students produce interactive slide shows, handouts and speaker notes.

CO 142**UNIX Shell Programming (2/2)**

Prerequisite: CO 132 – Students learn to write UNIX shell programs. In a hands-on environment students study shell processes, variables and file types, keyword and positional parameters. Flow control and looping constructs, redirection, piping, debugging aids, command line interpretation, and programming efficiency are also covered. A knowledge of shell programming is essential for UNIX Systems Administrators and Applications Developers.

CO 144**Music, Sound and Computers (MIDI) (2/2)**

Students use the Musical Instrument Digital Interface (MIDI) equipped computing system to enhance communication through music and sound; apply fundamental music and computer skills to create a music and/or sound segment for incorporation into composition or presentation of choice; and use the MIDI system for synthesizer programming and digital sequence recording while gaining familiarity with MIDI computer software. Prior introductory experiences with both music and computers recommended. CO 144 and MU 144 are the same course. Students receiving credit for one cannot receive credit for the other.

CO 145**Using the Internet (3/3)**

Prerequisite: CO 132, **Introduction to Unix**, or CO 105, **Introduction to Windows** – Using the Internet is a web-based course designed to provide students at GRCC with the skills and knowledge necessary to access the Internet, or "Information Super Highway," surf web pages, and locate information using Internet search engines. Students can work from home on their own computers (or use the Open Computer Lab at GRCC). Topics include: Web browsers, information resources on the Web, FTP and downloading, e-mail and communication tools, electronic commerce and creating a first homepage.

CO 146**Web Design Fundamentals (3/3)**

Students will learn the basics of web design, development, and publishing, including how to design and program a web page, set up a site and publish to the Internet. In this hands-on environment, students will design web pages using Front Page software, create simple graphics and be exposed to designing technique principals. Students will publish to a web server and will analyze site functionality. Students should have experience with the Internet, a knowledge of fundamental computer literacy and knowledge of the Windows operating system. HTML knowledge is useful but not required. If students do not have this experience, courses that provide this background include CO 101, CO 105 and CO 145.

CO 150**Introductory Computer Animation (2/2)**

Prerequisite: CO 101 – Students use animation techniques to articulate cartoon or a process simulation. Using computer animation software, students work with timing effects from manipulation, color cycling, film loops, palette transitions, sound files and other animation components.

CO 151**Electronic Spreadsheet (1/1)**

Prerequisite: CO 101 – Introduction to using the computer to electronically manipulate data on a spreadsheet. Practical examples are shown for work, home, and education. Topics include formulas, copying, formatting, graphing, large spreadsheets, wizards, printing, sorting and database commands. Students are assumed to have introductory computer experience, with little or no experience in electronic spreadsheets.

CO 153**Personal Computer Word Processing (1/1)**

The use of word processing software on a personal computer for enhancing efficiency and productivity. Participants are assumed to have had only a beginning experience with computers. Students will complete assignments on selected computers using appropriate software and equipment.

CO 162**Introduction to Desktop Publishing (2/2)**

Prerequisite: CO 101; **Co-requisite:** CO 120 – Desktop publishing is the design, layout, and printing of documents combining text and graphics. This course incorporates student hands-on experience with lectures/demonstrations in a computer equipped classroom. The course develops practical skills necessary for electronic page layout on the personal computer. Various desktop publishing projects are examined; newsletters, menus, resumes, advertising and identification packages. Design and production principles are demonstrated. The student will produce a variety of assigned desktop publishing projects. Lab fee.

CO 166**Interactive Multimedia (2/2)**

Prerequisite: CO 120 – Students use hypermedia software to develop applications that integrate media to communicate information through interaction. In a hands-on environment, students manipulate graphics, create and link modules, write scripts, integrate animations, produce sound events and access video segments. Each student produces a media-integrated environment where items are available by association.

CO 170**Introduction to Database Software (2/2)**

Learn the essential features of relational database software, why databases are such efficient data storage/retrieval facilities, and the procedures and settings they require to fit different situations. This course serves the needs of database users, not developers. (CO 171 is for developers. Students intending to develop database applications or information systems may take this course or a first course in a programming language to prepare for CO 171.) Two hours lecture/lab combination.

CO 171**Database Design and Development (3/3)**

A course for database programmers interested in design issues and the development process for building data libraries/database management systems. The course strongly emphasizes the design and development of relational databases.

CO 180**Cooperative Education in Computer Applications 1 (3/3)**

Prerequisite: Prior approval of Co-op Coordinator – Students participate in a cooperative program of work and learning that involves area employers. The student must work a minimum of 15 hours a week under supervision at an approved place of employment. The student, employer and coordinator will mutually agree on career-related projects. In addition, the student will complete assignments such as resumes, cover letters, and short papers on various career-related subjects, career assessments, etc. The student will also have a choice of seminars, lectures and/or job fairs to attend, as well as videos to view.

CO 181**Cooperative Education in Computer Applications 2 (3/3)**

Prerequisite: Prior approval of Co-op Coordinator – Students participate in a cooperative program of work and learning that involves area employers. The student must work a minimum of 15 hours a week under supervision at an approved place of employment. The student, employer and coordinator will mutually agree on career-related projects. In addition, the student will complete assignments such as resumes, cover letters, and short papers on various career-related subjects, career assessments, etc. The student will also have a choice of seminars, lectures and/or job fairs to attend, as well as videos to view.

CO 224**Systems Analysis (3/3)**

Prerequisite: CO 110 or equivalent – The role of the systems analyst in a computer environment. Includes feasibility studies, system design, screen design and layout, disk and tape record layout, input-output specifications, and control procedures.

CO 225**Advanced BASIC Programming (3/3)**

Prerequisite: CO 124 – A course for Windows BASIC programmers interested in extending capabilities with program design. Projects will emphasize advanced features such as Windows interfacing, text files, binary files, database interfacing, graphics, and other features of VISUAL programming.

CO 227**Object Oriented Programming (3/3)**

Prerequisite: CO 127 – Object-Oriented Programming (OOP) using C++. To enhance programmer productivity, students program Windows applications using OOP concepts. In a hands-on environment, students write programs using classes, objects, inheritance, polymorphism, functions, overloading, type conversions and other C++ features.

CO 230**Introduction to Telecommunications (2/2)**

Prerequisite: CO 101 – The telecommunications field is explored with special emphasis on the personal computer. Concepts include global telecommunication systems, personal computer networking, telecommunications applications, transmission media and telecommunication issues pertinent to the workplace. Two hours lecture/lab combination.

CO 231**Wide Area Networking (WAN) Theory (3/3)**

Prerequisite: CO 230 – Survey of structures and uses of computer networks for distributed processing. Students learn to analyze needs for computer networks. They learn to evaluate costs to the organization, such as software and hardware as well as political costs. They learn to describe the network system so other users can understand it.

CO 232**UNIX System Administration (2/2)**

Students learn how to administer a multi-user UNIX computer system. Installing, configuring, and managing the system are incorporated into group hands-on activities. Students use the procedures to monitor and maintain the system to prevent file corruption and to enhance use of the UNIX operating system.

CO 233**Local Area Networks (2/2)**

Prerequisite: CO 132 – Computer Local Area Networks (LAN) are thoroughly studied. Students learn the different topologies, terminology and theories that pertain to the field of networks by working in a Netware environment. Students will learn about use of network utility programs, file systems and how to use the NDS. Hands-on experience will be gained by working with networked PCs.

CO 234**Introduction to Netware Administration (2/2)**

Prerequisite: CO 233 – Students focus on Network Administration for a Novell Netware. Novell Directory Services (NDS) will be studied in-depth, including topics of planning and creating NDS directory tree and file system, installing a Netware server, creating users and groups, managing trustee assignments and file attributes, and login scripts. Students will cover a portion of CAN objectives in preparation for obtaining Novell Administration certification.

CO 235**Advanced LAN for Windows Server (2/2)**

Prerequisite: CO 233 – Students will learn to administer a Windows NT network. Topics include NT server installation and configuration, server storage and performance options, and server clients. Students will learn how to manage server folders, permission, and other software installation procedures on an NT server. Printer management and remote access will be applied to a Windows NT server.

CO 241**Web Databases (3/3)**

Prerequisites: CO 146, CO 171, CO 215 or equivalent of prerequisites with instructor approval – In this advanced course, students will learn to distinguish different types of databases and the software available to create them. They will learn the principles of relational databases, and how databases are connected to the World Wide Web. Students will create both simple and relational databases using industry-standard software, put the database on a Web server, and create the HTML code and scripts to link the database to the Web user.

CO 247**Internet Scripting (3/3)**

Prerequisite: Thorough understanding of the Internet and programming – HTML documents and scripts are designed using the latest editors and programming language. To enhance Internet scripting productivity, students program Windows applications using HTML editors and current object-oriented concepts. In a hands-on environment, students write scripts and HTML files using forms, columns, input areas, and text display. The scripts include CGI, Java, or current language. Lab fee.

CO 250**Three-dimensional Computer Animation (3/3)**

Prerequisite: CO 150 – Students use 3-D modeling and animation to articulate and communicate ideas and concepts. Student produces a series of fully rendered 3-D animated models in such areas as information video, marketing, facilities walk-throughs, and preproduction product evaluation. Using 3-D modeling software, students work with timing effects, creation of 3-D objects from a 2-D plane, materials editing, reflection mapping, and other 3-D animation operations. Prior experience using a graphical tool set to create 2-D animation is beneficial.

CO 260**Advanced Database Applications (3/3)**

Prerequisite: CO 171 – A thorough introduction to programming techniques for a relational database management system. Emphasis is on the development of self-contained application systems using interrelated files. Relational database code compilers and code generators are examined.

CO 262**Advanced Desktop Publishing (2/2)**

Prerequisite: CO 162 – Students prepare publications for commercial printing at a significant time savings using advanced desktop publishing commands. Working with a service bureau, students complete all pre-press tasks in class, including color separations. Students practice team design and problem solving skills.

CO 265**Computer Systems (2/4)**

Students learn to connect microcomputers to peripheral devices; includes microprocessor architecture, peripherals, parallel and serial input/output current loops, RS-232-C interface, IEEE-488 interface, microcomputer and analog devices. Students learn to connect microcomputers with several different kinds of input and output devices to create operational data gathering and reporting systems. Four hours lecture/lab combination. CO 265 and EL 265 are the same course; therefore, credit cannot be granted for both courses.

CO 266**Computer Servicing (2/4)**

Prerequisite: CO 265 or EL 265 – Students learn to troubleshoot and repair microcomputer systems, including microcomputer software, basic operation of system components, troubleshooting techniques and documentation of analysis and repair information. They learn basic operational theories and perform extensive laboratory work involving analysis and repair of computers. Four hours lecture/lab combination. CO 266 and EL 266 are the same course; therefore, credit cannot be granted for both courses.

CO 270**Introduction to PC Repair (3/3)**

This course begins with fundamental computer terminology. It emphasizes the practical knowledge students require to service and upgrade a personal computer. The student will disassemble and reassemble a PC.

CO 298**Independent Study in Computer Applications 1 (1/1)**

Prerequisite: Sophomore standing – Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of computer applications and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take CO 298. No student may earn more than two credits in independent study.

CO 299**Independent Study in Computer Applications 2 (1/1)**

Prerequisite: Sophomore standing – Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of computer applications and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take CO 298. No student may earn more than two credits in independent study.

COOPERATIVE EDUCATION

(See **Business, Computer Applications, Criminal Justice, Culinary Arts, Fashion Merchandising, Human Services, Interiors and Furnishings, Secretarial Studies, Technology**)

DANCE

(See **Theatre**)

DA – DENTAL ASSISTING**DA 105****Nutrition and Oral Disease Prevention (2/2)**

Co-requisite: DA 112 – A comprehensive overview of nutrition as an integral component of oral as well as systemic health. Students will learn to apply sound principles for patient education and for evaluation of nutritional information. The course will conclude with the role of nutrition in the etiology and prevention of dental caries. Offered Fall semester. Department Consent Required.

DA 112**Science for the Dental Assistant (2/2)**

This is an introductory course designed to provide the dental assistant with the basic knowledge of microbiology and the anatomy, physiology, and structural organization of the human body. Offered Fall semester. Department Consent Required.

DA 116**Assisting in General Dentistry (6/10)**

Prerequisites: DA 112, DX 104, DA 105, and DX 115 – Theory and application of the principles of four-handed chair-side dental assisting in general dentistry. Offered Fall semester. Department Consent Required.

DA 118**Dental Biomaterials (2/3)**

Prerequisite: DX 104; **Co-requisite:** DA 116 – In-depth study of the physical properties, manipulation, and utilization of dental materials, including the use of dental office laboratory equipment. Offered Fall semester. Department Consent Required.

DA 120**Dental and Oral Anatomy, Histology and Embryology for Dental Assisting (2/2)**

Co-requisite: DA 112 – This course will provide an in-depth study of oral anatomy and also familiarize the student with the histology and embryology of the oral structures. Offered Fall semester. Department Consent Required.

DA 126**Assist in Dental Specialties (4/6)**

Prerequisite: DA 116 – An overview of the techniques and procedures of the dental specialties: Orthodontics, Pediatric Dentistry, Oral and Maxillo-facial surgery, Endodontics, Periodontics, and Prosthodontics. Emphasis is on procedures which can be performed by the Registered Dental Assistant. Offered Winter semester. Department Consent Required.

DA 128**Principles of Dental Assisting 2 (5/7.5)**

Prerequisites: DA 116 and DA 118 – A continuation of Principles of Dental Assisting 1, including oral health management programs and RDA Expanded Functions. Offered Winter semester. Department Consent Required.

DA 129**Applied Principles of Dental Assisting (2/3)**

Prerequisite: DA 128 – A clinical practice course designed to give the student clinical experience as a dental assistant in private dental practice. Offered Winter semester. Department Consent Required.

DA 130**Applied Principles of Dental Assisting Seminar (1/1)**

Prerequisite: DA 128; **Co-requisites:** DA 126 and DA 129 – A seminar course designed to allow the student to share private dental practice experiences with peers and the instructor. Offered Winter semester. Department Consent Required.

DA 139**Management of the Dental Office (3/3)**

A course designed to familiarize the student with the role of the dental office management assistant including clerical tasks, computer programs, and office equipment. Offered Winter semester. Department Consent Required.

DA 160**Oral Pathology for Dental Assisting (1/1)**

Prerequisites: DA 120 and DA 112 – This course is designed to familiarize the student with the following areas of oral pathology: inflammation and repair, immunity, neoplasia, and oral manifestation of systemic disease. Offered Winter semester. Department Consent Required.

DA 208**Dental Assisting Clinical Practice (8/8)**

Prerequisites: DA 126, DA 128, and DA 129; **Co-requisite:** DA 209 – Off-campus clinical practice in private dental offices, one of which will be a dental specialty office. Offered Summer semester. Department Consent Required.

DA 209**Dental Assisting Clinical Practice Seminar (1/1)**

Prerequisites: DA 126 and DA 129; **Co-requisite:** DA 208 – Seminar would provide time for students to discuss their experiences in dental clinical practice with their peers and instructor. Includes a review of Dental Assisting topics and employment-seeking skills. Offered Summer semester. Department Consent Required.

DA 298**Independent Study in Dental Assisting 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of Dental Assisting and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director and the appropriate Dean before they register for this course. Students electing independent study for the first time should elect DA 298. No student may earn more than two credits in independent study.

DA 299**Independent Study in Dental Assisting 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of Dental Assisting and must have written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should elect DA 298. No student may earn more than two credits in independent study.

DH – DENTAL HYGIENE**DH 113****Dental Head and Neck Anatomy, Embryology, and Histology (5/6)**

Co-requisite: DH 119 – A study of the normal anatomy of the head and neck, including the structures of the oral cavity. Embryological development and histological features will also be discussed. The course includes a laboratory session in which tooth morphology is explored. Offered Fall semester. Department Consent Required.

DH 117**Applied Oral Disease Prevention and Preventive Therapies (3/3)**

Prerequisites: DX 104, DX 115, DH 113, DH 119, and DH 120; **Co-requisite:** DH 129 – The semester will be spent studying methods for preventing oral disease, including nutritional and dietary counseling and dealing with patient education and behavior modification techniques. Reading assignments, class discussion, role playing, oral physiotherapy aid presentation, and a patient education project will prepare students to apply preventive dentistry concepts in clinical dental hygiene courses and community dental health. Offered Winter semester. Department Consent Required.

DH 119**Pre-Clinical 1 (6/10)**

Co-requisites: DH 113, DX 104, and DX 115 – The first of two dental hygiene pre-clinical courses, with emphasis placed on the knowledge and skills needed prior to patient treatment, examination and subsequent charting of the head, neck, and oral cavity, and the development of basic dental hygiene skills. Offered Fall semester. Department Consent Required.

DH 120**Nutrition for the Dental Hygienist (3/3)**

A study of the nature of nutrients, their effects on general and oral health, and their importance in the prevention of oral diseases. Students learn to evaluate dietary patterns and offer subsequent suggestions for improvement. Offered Fall semester. Department Consent Required.

DH 129**Pre-Clinical 2 (6/10)**

Prerequisites: DX 104, DX 115, DH 113, and DH 119; **Co-requisites:** DH 117 and DX 126 – The second of two dental hygiene pre-clinical courses with an emphasis on the development of more advanced dental hygiene clinical skills, leading to contemporary skills. Eight-hour labs switch to eight-hour clinicals after first half of the semester. Offered Winter semester. Department Consent Required.

DH 182**Applied Dental Biomaterials (2/3)**

Co-requisite: DH 209 – Uses of dental materials including properties, manipulation, utilization, and applications in dental and dental hygiene procedures. Offered Summer semester. Department Consent Required.

DH 192**General and Oral Pathology for Dental Hygiene (3/3)**

Prerequisites: DH 113 and DH 119; **Co-requisites:** DX 126 and DH 129 – General and oral pathology from the dental hygienist's perspective. Topics include inflammation and repair, immunity, neoplasia, genetics, and oral manifestations of systemic disease. Special emphasis is placed on recognizing the presence of abnormalities. Offered Winter semester. Department Consent Required.

DH 202**Local Anesthesia for the Dental Hygienist (2/2)**

Prerequisite: Completion of at least one year of an accredited dental hygiene program – This course will prepare the dental hygiene student (or registered dental hygienist) to administer local anesthetic injections as allowed under Michigan law. Course content also includes a review of the applicable head and neck anatomy, the pharmacology of local anesthetics, and the rationale of pain control. Lab kit required.

DH 205**Dental Specialties (2/2)**

Prerequisite: DH 209; **Co-requisites:** DH 219 and DH 227 – A course designed to familiarize the dental hygiene student with the specialties of dentistry to allow the student to better serve clients with advanced treatment needs. Offered Fall semester. Department Consent Required.

DH 209**Clinical Dental Hygiene 1 (3/6)**

Prerequisites: DH 117, DH 129, DH 192, and DX 126 – Introductory course to the clinical care/treatment of dental hygiene clients. Emphasis is on building fundamental dental hygiene skills. Offered Summer semester. Department Consent Required.

DH 214**Community Dental Health 1 (2/2)**

Prerequisite: DH 217; **Co-requisite:** DH 227 – An introductory course in community dental health, including the use of statistical data to assess and plan dental health programs. Offered Fall semester. Department Consent Required.

DH 217**Client Care and Management 1 (2/2)**

Prerequisite: DH 129; **Co-requisites:** DH 182 and DH 209 – An introduction to the principle of care and management for dental hygiene clients in a clinical setting, including communicating with clients and peers as a dental hygiene professional. Offered Summer semester. Department Consent Required.

DH 219**Clinical Dental Hygiene 2 (6/12)**

Prerequisites: DH 209, DH 234, and DH 182 **Co-requisites:** DH 235, DH 205, DH 214, DH 227, and DH 266 – The clinical care and treatment of dental hygiene clients. Basic dental hygiene skills are expanded and improved upon through practice in the College's Dental Clinic. Visits are also made to off-campus sites to gain experience in delivering care for special population groups. Offered Fall semester. Department Consent Required.

DH 224**Community Dental Health 2 (1/1)**

Prerequisite: DH 214; **Co-requisite:** DH 237 and DH 229 – A continuation and application of principles acquired in Community Dental Health 1. Students will plan, implement and evaluate community dental health programs. Offered Winter semester. Department Consent Required.

DH 227**Client Care and Management 2 (4/5)**

Prerequisite: DH 217; **Co-requisite:** DH 219 – Continuation of the principles of professional dental hygiene care. Practice in treatment planning for dental hygiene clients. Introduction to the principles of dental hygiene care for special population groups. Offered Fall semester. Department Consent Required.

DH 229**Clinical Dental Hygiene 3 (6/12)**

Prerequisite: DH 219 **Co-requisites:** DH 224, DH 237, DH 275, and DH 276 – The clinical care and treatment of dental hygiene clients with an emphasis on treating more complex and difficult cases. Dental hygiene skills are improved through practice in the GRCC Dental Clinic. Visits are also made to off-campus clinical sites to gain experience in delivering dental hygiene care for special population groups. Offered Winter semester. Department Consent Required.

DH 234**Periodontology 1 (1/1)**

Prerequisites: DH 129 and DX 126; **Co-requisite:** DH 209 – Fundamental principles of periodontology: etiology, histopathology, inflammatory process, gingival and periodontal diseases, assessment, and introduction to diagnosis. Offered Summer semester. Department Consent Required.

DH 235**Periodontology 2 (2/2)**

Prerequisite: DH 234; **Co-requisites:** DH 219 and DH 266 – Advanced principles of periodontology; advanced diagnosis and assessment techniques, preventive and treatment planning, implementation of treatment, client education and motivation, principles of periodontal surgery, and prognosis. Offered Fall semester. Department Consent Required.

DH 237**Client Care Management 3 (3/4)**

Prerequisite: DH 227; **Co-requisite:** DH 229 – Continuation of the principles of dental hygiene care for special population groups. Offered Winter semester. Department Consent Required.

DH 266**Pharmacology for Dental Hygiene (2/2)**

Prerequisite: DH 209; **Co-requisite:** DH 219 – A study of pharmacology with a special emphasis on the drugs used in dentistry and the effects of drugs on dental treatment. Offered Fall semester. Department Consent Required.

DH 275**Dental Ethics and Jurisprudence (1/1)**

In this course, the dental hygiene student will learn the importance of ethical standards and the effects of jurisprudence relative to the practice of dental hygiene. Offered Winter semester. Department Consent Required.

DH 276**Dental Hygiene Professional Seminar (1/1)**

Co-requisites: DH 224, DH 229, DH 237, and DH 275 – This course focuses on the criteria for assessing the work environment, dental practice management, and employment-seeking skills. The student will also acquire skills for assuming professional membership and leadership roles. Offered Winter semester. Department Consent Required.

DH 298**Independent Study in Dental Hygiene 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of Dental Hygiene and must have written permission of the supervising instructor, the appropriate Department Head/Program Director and the appropriate Dean before they register for this course. Students electing independent studies for the first time should elect DH 298. No student may earn more than two credits in independent study.

DH 299**Independent Study
in Dental Hygiene 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of Dental Hygiene and must have written permission of the supervising instructor, the appropriate Department Head/Program Director and the appropriate Dean before they register for this course. Students electing independent studies for the first time should elect DH 298. No student may earn more than two credits in independent study.

DR – DRAFTING**DR 110****Introduction to
Auto Body Drafting (3/4)**

Prerequisites: EG 110 or permission of instructor – This course is an introduction into the field of Auto Body drafting 2-D complex contours. The student will study the relationship of points, lines, planes, views and their placement on auto body drafts. Students will become familiar with the practices, techniques and drawing requirements for auto body drafting.

DR 130**Descriptive Geometry (2/4)**

See EG 121

DR 160**Electronics Drafting (CAD) (2/4)**

Prerequisite: EG 110 or DR 228 – Basic electronics drafting using Autocad computer-generated graphics to include terminology, techniques, and applications. Includes dimensioning, tolerancing, block diagrams, schematic diagrams, logic diagrams, wiring diagrams, ladder diagrams, printed circuit boards, graphs and charts, and isometric drawings. Four hours lecture/lab.

DR 170**Introduction to Drafting (2/4)**

See EG 120

DR 212**Tool Design (2/4)**

Prerequisites: EG 110 or EG 120 and DR 228 – Designing of jigs, fixtures, and gauges.

DR 224**Die Design (2/4)**

Prerequisites: EG 110 or EG 120 and DR 228 – Designing of die components. Selection of standard parts, materials, stock listing dimensioning, determining pressures and clearances, and the discussion of presses will be important units of this course. Four hours lecture/lab.

DR 225**Advanced Die Design (2/4)**

Prerequisite: DR 224 – A drafting course concentrating on the design of sheet metal dies in which the student designs compound, progressive, and complex trim dies using cam action, stock lifters, and spring pads. Four hours lecture/lab combination.

DR 226**Machine Design and
Blueprint Reading (3/4)**

Prerequisites: EG 110 or EG 120 and DR 228 – Students learn basic machine design concepts for the following types of machines: welding, automated assembly, forming, chip making and bonding; includes transfer mechanism drives, materials, bearings, controls, clamping, gauging, safety, and ergonomics. Four hours lecture/lab.

DR 228**Introduction to Computer
Aided Design (3/4)**

Prerequisites: EG 120 or DR 170 – Computer-generated graphics to include terminology, techniques and applications of computer aided design (CAD) in engineering, tool design, architecture, and electronics. Two dimensional drafting is emphasized. Four hours lecture/lab combination.

DR 228A**Introduction to CAD
Module A (1/1.33)**

Introduction to AutoCAD. The student will be introduced to computer interfaces as well as basic drawing and editing commands.

DR 228B**Introduction to CAD
Module B (1/1.33)**

Prerequisite: DR 228A – Continued introduction to CAD. This module covers more advanced editing commands as well as hatching, tolerancing, and creating blocks.

DR 228C**Introduction to CAD
Module C (1/1.33)**

Prerequisite: DR 228B – A continuation of Introduction to CAD. This course covers more advanced editing commands, control features, and inquiry commands. This course also includes several project drawings that will give the student significant applications experience.

DR 229**Detail Drafting (3/4)**

Prerequisite: EG 110 or DR 228, DR 212, and EG 201 – An advanced drafting course that involves industrial drafting practices relative to standards, design, layout, dimensioning, tolerancing, detailing, and checking. AutoCAD is required. Four hours lecture/lab combination.

DR 230**Descriptive Geometry 2 (2/4)**

See EG 230

DR 238**Intermediate Computer
Aided Design (3/4)**

Prerequisites: EG 110 or DR 228 and EG 120 – Computer aided design applications in three-dimensional graphics applied to engineering, tool design, architecture and electronics. Students study system operation, dimensioning, and parts geometry. Four hours lecture/lab combination.

DR 238A**Intermediate CAD
Module A (1/1.5)**

Prerequisite: DR 228 or equivalent – Introduction to the use of AutoCAD to produce 3D drawings. The AutoCAD interface is covered as well as basic 3D drawing options including line thickness and wireframe. Also covered are the 3D options available and UCS system.

DR 238B**Intermediate CAD
Module B (1/1.25)**

Prerequisite: DR 238A or equivalent – This module covers 3D surfacing and an introduction to solid modeling. Various approaches to surfacing and solid modeling will be discussed as well as the examination of mass properties. (A continuation of DR 238A)

DR 238C**Intermediate CAD
Module C (1/1.25)**

Prerequisite: DR 238B or equivalent – This module covers completing engineering drawings from 3D models as well as creating patterns and using other advanced modeling techniques. (A continuation of DR 238B)

DR 241**Mold Design and Theory (3/4)**

Prerequisites: MN 220 and EG 110 or DR 228 and EG 120 – The study of injection mold design to include principles of the injection molding machine, heat measurement, heat transfer within the mold, mold calculations, mold types, runner and gate design, venting, mold components, and materials used in mold-making. Students will design several kinds of injection molds. Four hours lecture/lab.

DR 250**Introduction to
Mechanical Desktop (3/4)**

Prerequisites: EG 110 or DR 228 and EG 120, and DR 238 or permission of instructor – Students learn to use a parametric computer aided design system to generate 3D models, assemblies and detail drawings.

DR 250A**Mechanical Desktop
Module A (1/1.33)**

Introduction to Mechanical Desktop. The student will be introduced to computer interfaces as well as basic solids construction and editing.

DR 250B**Mechanical Desktop
Module B (1/1.33)**

Prerequisite: DR 250A – Students learn more advanced modeling techniques including, the Born technique, reference geometry, revolving of features, feature arrays, and generating 2D views from models.

DR 250C**Mechanical Desktop
Module C (1/1.33)**

Prerequisite: DR 250B – Students learn parent/child feature relations; advanced modeling techniques including 3D fillets and chamfers, perform the intersect-boolean operations as well as create 3D assembly and exploded assemblies.

DR 258**Introduction to
Pro-Engineering (4/4)**

Prerequisites: EG 110, or DR 228 and EG 120, and DR 238 or permission of instructor – Students learn to use a Parametric and Bi-direction Computer Aided Design system to generate 3-D models, shaded pictures, assemblies, and detail drawings. This course has a plate fee in addition to the enrollment fees and tuition.

DR 258A**Introduction to Pro/Engineer
Module A (1/1)**

Prerequisite: DR 170 and DR 228, or AP 114 and DR 228, or EG 110 – Introduction to the use Pro/Engineer software, the user interface, use of Sketcher and an introduction to feature construction and management are covered.

DR 258B**Introduction to Pro/Engineer
Module B (1/1)**

Prerequisite: DR 258A or equivalent – This module covers revolved protrusions, mirror copies, rounds, chamfers, modeling utilities, parent/child relationships, Sketcher tools, datum planes and axes.

DR 258C**Introduction to Pro/Engineer
Module C (1/1)**

Prerequisite: DR 258B or equivalent – This module covers patterns, copies, and creating and engineering drawing.

DR 258D**Introduction to Pro/Engineer
Module D (1/1)**

Prerequisite: DR 258C or equivalent – This module covers creating and modifying assembly drawings as well as sweeps and blends.

DR 259**Advanced Part Design
and Sheet Metal Design (4/4)**

Prerequisite: DR 258 – Students learn to use a Parametric and Bi-directional Computer Aided Design system to generate: Non-parallel Blends (Rotational Blends, General Blends, Swept Blends, General) and Advanced Sweeps (Variable Sections Sweeps, Helical Sweeps) and Family Tables. In the area of Sheet Metal Design the student will learn to create Base walls, Bend and Unbend features. Punch and Notch features, Sheetmetal Cuts, Bend Tables and Flat Pattern features.

DR 298**Independent Study
in Drafting 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of drafting, and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director and the appropriate Dean before they register for this course. Students electing independent study for the first time should take DR 298. No student may earn more than two credits in independent study.

DR 299**Independent Study
in Drafting 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of drafting, and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director and the appropriate Dean before they register for this course. Students electing independent study for the first time should take DR 298. No student may earn more than two credits in independent study.

DX – DENTAL AUXILIARY**DX 104****Infection Control in Dentistry (2/2)**

Prerequisite: BI 127 for Dental Hygiene; **Co-requisite:** DA 112 and Department consent required for Dental Assisting – An introduction to modern concepts of infection control in dentistry and GRCC infection control protocol. Includes personal protection, aseptic techniques, sterilization methods, equipment, and management of hazardous waste. Offered Fall semester.

DX 115**Introduction to Dentistry (2/2)**

An introduction to the Dental, Dental Hygiene and Dental Assisting professions with an emphasis on the importance and development of individual professionalism, shared auxiliary functions and teamwork. Offered Fall semester.

DX 126**Dental Radiography (4/6)**

Prerequisite: DX 104, DH 113, or DA 120

– Principles of dental radiography with emphasis on the physics of ionizing radiation, including hazards of radiation and safety precautions. Lab experience involves practice on x-ray manikins, non-exposure partner practice, and implementation of radiation safety principles. Clinical application of the principles of radiographic production, including radiation hazards and safety precautions, exposure, processing, mounting, interpretation, and client management. Offered Winter semester. Department Consent Required.

DX 298**Independent Study
in Dental Auxiliary 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of Dental Auxiliary and must have written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent studies for the first time should elect DX 298. No student may earn more than two credits in independent study.

DX 299**Independent Study
in Dental Auxiliary 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of Dental Auxiliary and must have written permission of the supervising instructor, the appropriate Department Head/Program Director and the appropriate Dean before they register for this course. Students electing independent studies for the first time should elect DX 298. No student may earn more than two credits in independent study.

EC – ECONOMICS**EC 251****Principles of Economics 1 (3/3)**

Introduction to the principles of macro-economics. Focus is on overall functioning of the American economy. American economic system is compared and contrasted with other economic systems. Major national income accounts are introduced and analyzed. Primary emphasis is on issues of unemployment, inflation and economic growth. Major theories interpreting these issues are evaluated. Attention is also given to international trade and finance as these activities impact domestic economy.

EC 252**Principles of Economics 2 (3/3)**

Prerequisite: sophomore standing – Microeconomic; markets, the price system, the allocation of resources; distribution of income, current economics problems; international economics; alternative economic systems.

EC 283**Inside the Global Economy (3/3)**

Prerequisite: EC 251 recommended – Provides a comprehensive picture of the main forces and core concepts interacting in the global economy today and the impact of these forces on business, industry and daily lives of individuals. Examines issues such as trade deficits, deregulation, import quotas, exchange rates, and balance of payments; and explores implications of these issues for American economy.

EC 298**Independent Study
in Economics 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of economics and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take EC 298. No student may earn more than two credits in independent study.

EC 299**Independent Study
in Economics 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of economics and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take EC 298. No student may earn more than two credits in independent study.

ED – EDUCATION**ED 200****Introduction to Education (3/3)**

Prerequisite: Recommended that CD 118 or PY 233 be taken before or concurrently – ED-200 has been designed to help prospective teachers make informed decisions about careers in education. ED-200 is an introduction to teaching as a profession, as well as an introduction into the practice of teaching. Students will be required to participate in activities associated with becoming a teacher. Observational experiences in a variety of educational settings will be an important part of this course. Course content focuses upon the foundations of education including: an overview of the history and philosophy of education, learning theories, instructional strategies, and assessment as well as current issues and trends. At all junctures in the course, students will be challenged to extend classroom discussion through additional readings, collaborative projects and written reflections.

ED 298**Independent Study
in Education 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of education and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take ED 298. No student may earn more than two credits in independent study.

ED 299**Independent Study
in Education 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of education and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take ED 298. No student may earn more than two credits in independent study.

EG – ENGINEERING**EG 110****Industrial Graphics with CAD (3/6)**

Students learn to interpret and create industrial drawings by using manual drawing techniques and AutoCAD Computer-Generated Graphics to create multiview drawings. Students learn proper view position, sketching, orthographic projection, isometric, geometric construction, equipment usage, auxiliary view, section views, dimensioning, tolerancing, threads and fasteners. Six hours lecture/lab.

EG 120**Introduction to Drafting (2/4)**

Lettering, use of instruments, geometric constructions, principles of orthographic projection, auxiliary and sectional views. Students also study threads and fasteners, dimensioning, welding symbols, detail working drawings, and machine trades blueprint reading. Students receiving credit for this course cannot also receive credit for DR 170. This is a manual drafting course. Four hours lecture/lab.

EG 121**Descriptive Geometry (2/4)**

Basic geometric problems of engineering; distances, angles, lines and planes; intersections of lines and planes, parallelism, perpendicularity, and vector analysis. Students receiving credit for this course cannot also receive credit for DR 130. Four hours lecture/lab combination.

EG 201**Advanced Engineering
Graphics (2/4)**

Prerequisites: EG 110 or DR 228 and EG 120 – Advanced engineering drafting using autocad computer generated graphics to include terminology, techniques and applications. Includes detail and assembly working drawings, weldments, piping, structural drafting, threads and fasteners, geometric tolerancing, and cams.

EG 208**Statics (3/3)**

Prerequisites: MA 134 and PH 245 (or take concurrently) – Principles of mechanics and their applications to problems of engineering; forces, components, moments, couples, trusses, frames, cables, friction; centroids, fluid forces, dams, and virtual work. Three hours lecture.

EG 212**Dynamics (3/3)**

Prerequisite: EG 208 – Newton's law of motion, impulse and momentum, energy, dynamics of particle systems and plane rigid bodies, and rigid body dynamics in three dimensions. Three hours lecture.

EG 215**Mechanical Vibrations (1/1)**

Prerequisite: Take concurrently with EG 212 or permission of instructor – This supplementary course covers fundamental vibrations of one degree of freedom mechanical systems (undamped, damped, free and forced). Newton's Laws and energy methods are used as well as an introduction to the methods of Euler and LaGrange. One hour lecture.

EG 230**Descriptive Geometry 2 (2/4)**

Prerequisite: EG 121 – Engineering problems concerning piercing points, isometric intersection, intersection of two prisms, intersection of cone and cylinder, intersection of two cones, intersection of two cylinders, intersection of plane and cone, intersection of plane and sphere, bearing, slope, and grade, tangencies, developments. Four hours lecture/lab combination. Students receiving credit for this course cannot also receive credit for DR 230.

EG 298**Independent Study
in Engineering 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of engineering and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take EG 298. No student may earn more than two credits in independent study.

EG 299**Independent Study
in Engineering 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of engineering and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take EG 298. No student may earn more than two credits in independent study.

**EL – ELECTRICITY AND
ELECTRONICS****EL 101****Basic Electrical Skills (2/3)**

Students acquire the knowledge used by an electrician including basic math, electricity, circuits, use of hand tools, electrical materials, wiring techniques, and safety. Three hours lecture/lab combination.

EL 101A**Basic Electrical Skills
Module A (1/1.5)**

An introduction to the basic knowledge required by a field electrician including safety rules, applicable electrical codes, common hand tools, trade math, and electrical theory.

EL 101B**Basic Electrical Skills
Module B (1/1.5)**

Prerequisite: EL 101A – An introduction to the common materials used by electricians for the installation of electrical systems as well as the various types of electrical installations, blueprint reading, and estimation.

EL 106**Technical Electricity (4/8)**

Prerequisite: high school algebra or equivalent – Basic course in electricity for electronics majors; fundamentals of direct and alternating current circuits; use of Ohm's Law, Kirchoff's Laws and network theorems; theory and operation of resistors, inductors and capacitors in series and parallel circuits and testing equipment. Eight hours lecture/lab combination.

EL 107**Technical Electronics (4/8)**

Prerequisite: EL106 or equivalent – Introduction to the technical concepts of electronic components, circuits and theory; principles of current and voltage control devices; basic circuits for power supplies, amplifiers, oscillators, and use of basic test instruments. Eight hours lecture/lab combination.

EL 108**Electronic Servicing (2/4)**

Prerequisite: EL 202 – An introduction to the servicing of modern electronic equipment; functions of basic components and circuits; use of schematic diagrams; use of basic test equipment and procedure followed in troubleshooting audio and radio equipment. Four hours lecture/lab combination.

EL 109**Television Servicing Techniques (2/4)**

Prerequisite: EL 108 or permission of instructor – An introduction to the servicing of television receivers. Will include basic operation of TV receivers, use of schematic diagrams, use of testing equipment, and procedure followed by troubleshooting TV receivers. Four hours lecture/lab combination.

EL 132**Electronics Mathematics (5/5)**

Prerequisite: high school algebra or equivalent – A study of mathematics and its application to electronics; includes scientific notation, algebraic expressions, fractions, equations, exponents, logarithms, determinates, trigonometric functions and number systems.

EL 144**Basic Electricity and Electronics (3/6)**

Prerequisite: Minimum of 10th grade reading level and 9th grade Algebra level – This course provides an introduction to electricity and electronics. Includes electric and electronic components, circuits, and devices. Basic applications show the use of these components and devices. Six hours lecture/lab combination.

EL 144A**Basic Electricity and Electronics Module A (1/2)**

Basic introduction to electricity, its terms and function of direct current circuit and power sources.

EL 144B**Basic Electricity and Electronics Module B (1/2)**

Prerequisite: EL 144A – A continuation of Basic Electricity and Electronics. It includes magnetism and magnetic devices, as well as AC circuit considerations. Department Consent Required.

EL 144C**Basic Electricity and Electronics Module C (1/2)**

Prerequisite: EL 144A – A continuation of Basic Electricity and Electronics. This course covers basic semiconductor theory and its application in fundamental mini systems.

EL 160**Electronic Fabrication (2/3)**

Students acquire the basic knowledge and skills used in the fabrication of electronic products. These include making the drawings necessary for the design, layout and fabrication of the sheet metal package, the printed circuit board, the wiring harness, final assembly and testing procedures. Three hours lecture/lab combination.

EL 161**Introduction to Digital Logic (2/4)**

Prerequisite: Minimum 10th grade reading level and 9th grade Algebra level – A study of the binary number system, codes, Boolean algebra, minimization techniques, logic gates, code converters, flip-flops, counters, shift registers and binary arithmetic techniques. Four hours lecture/lab combination.

EL 162**Control Systems (2/3)**

An introduction to industrial control systems, including principles of control, diagrams, input sensors, output devices, and programmable controller theory. Emphasis will be given to basic theory, programming skills, and application of programmable logic controllers. Three hours lecture/lab combination.

EL 163**Electrical Troubleshooting (2/2)**

Prerequisite: EL 101 – Students learn the basic technique of troubleshooting electric circuits, including measurement techniques, analysis of faults and repair procedures. Two hours lecture/lab combination.

EL 164**Programmable Logic Controllers (2/3)**

Students learn the basic concepts of programmable logic controllers (PLCs), understanding hardware components, programming techniques, and installation and maintenance of complete systems. Hands-on programming of PLCs is emphasized. Three hours lecture/lab combination.

EL 166**Advanced Programmable Logic Controllers (2/3)**

Prerequisite: EL 164 – A continuation of EL 164. Students learn advanced concepts of programmable logic controllers (PLC) memory organization, block moves, documentation, math instructions, analog I/O, program development, and communications. Hands-on PLC projects are emphasized. Three hours lecture/lab combination.

EL 201**Industrial Electricity (3/6)**

Prerequisite: EL 106 – Application of electricity to industry; principles of DC and AC generators, three phase circuits, motors, starters, controllers, transformers, and electromagnetic devices. Six hours lecture/lab combination.

EL 201A**Industrial Electricity Module A (1/2)**

Prerequisite: EL 106 or EL 144 – Course covers electromagnetic induction, dynamic construction, DC generators and motors, and efficiency and control of DC dynamos.

EL 201B**Industrial Electricity Module B (1/2)**

Prerequisite: EL 201A – Course covers AC Dynamos, poly-phase alternators, and single and poly-phase transformers.

EL 201C**Industrial Electricity Module C (1/2)**

Prerequisite: EL 201B – Course covers single and 3 phase AC motor operation and control as well as special devices.

EL 202**Communication Electronics (3/6)**

Prerequisite: EL 107 – Theory and operation of voltage- and current-controlled devices in the transmission and reception of radio frequency. To include: oscillators, radio frequency amplifiers, modulators, antennas, and television circuits. Introduction to microwaves, radar and navigational systems. Six hours lecture/lab combination.

EL 203**Applied Measurements (3/6)**

Prerequisite: Minimum 10th grade reading level and 9th grade Algebra level and EL 107 – A study of instruments and their application in the measurement of electrical and physical properties. Includes ammeters, voltmeters, ohmmeters, bridge circuits, and the oscilloscope. Measurement of current, voltage, resistance, impedance, power, frequencies, capacity, inductance, strain, light, heat, and sound. Six hours lecture/laboratory combination.

EL 204**Industrial Electronics (3/6)**

Prerequisite: EL 107 – Electronics as applied to industry; includes rectifiers, thyristors, S.C.R.'s, control circuits, thermal sensors, photocells, electronic heaters, welding, motor controls, magnetic amplifiers, ultrasonic and programmable logic controllers. Six hours lecture/lab combination.

EL 205**Transistor Electronics (3/6)**

Prerequisite: EL 107 – Study of semi-conductors and their application to modern circuits; semiconductor physics, diodes, transistors, amplifiers, oscillators, and design applications. Students design and build an amplifier circuit. Six hours lecture/lab combination.

EL 225**Color TV Servicing (2/4)**

Prerequisite: EL 109 – A study of the circuits and techniques used to service modern color TV receivers. Four hours lecture/lab combination.

EL 226**Advanced Servicing Techniques (2/4)**

Prerequisite: EL 225 – A study of the circuits and techniques used to service modern electronic devices. Four hours lecture/lab combination.

EL 261**Microcomputer Programming (2/4)**

Prerequisite: EL 263 – An introduction to machine language programming of microcomputers to include microcomputer architecture, programming techniques and instruction sets. Students write and run programs on microcomputers. Four hours lecture/lab combination.

EL 262**Basic Digital Logic Circuits (2/4)**

Prerequisites: EL107 and EL 161 – An introduction to logic circuits. Includes digital gates, flip-flops, counters, registers, multiplexers, and analog/digital converters. Four hours lecture/lab combination.

EL 263**Digital Computer Systems (2/4)**

Prerequisite: EL 262 – Microcomputer architecture, software, and applications; includes description and operation of microprocessors, ROMS, RAMS, interface devices, and peripheral devices. Four hours lecture/lab combination.

EL 264**Linear Integrated Circuits (2/4)**

Prerequisite: EL 107 or equivalent – A survey of operational amplifiers, integrated circuit regulators, and integrated circuit timers. Operational amplifier characteristics are emphasized. Circuits included are detectors, amplifiers, signal generators, and active filters. Four hours lecture/lab combination.

EL 265**Computer Systems (2/4)**

Students learn to connect microcomputers to peripheral devices; includes microprocessor architecture, peripherals, parallel and serial input/output current loops, RS-232-C interface, IEEE-488 interface, microcomputer and analog devices. Students learn to connect microcomputers with several different kinds of input and output devices to create operational data gathering and reporting systems. Four hours lecture/lab combination. CO 265 and EL 265 are the same course; therefore, credit cannot be granted for both courses.

EL 266**Computer Servicing (2/4)**

Prerequisite: CO 265 or EL 265 – Students learn to troubleshoot and repair microcomputer systems, including microcomputer software, basic operation of system components, troubleshooting techniques and documentation of analysis and repair information. They learn basic operational theories and perform extensive laboratory work involving analysis and repair of computers. Four hours lecture/lab combination. CO 266 and EL 266 are the same course; therefore, credit cannot be granted for both courses.

EL 270**Introduction to PC Repair (3/3)**

This course begins with fundamental computer terminology. It emphasizes the practical knowledge students require to service and upgrade a personal computer. The student will disassemble and reassemble a PC.

EN – ENGLISH

All English courses include materials by and about minorities. Credit will not be granted for both EN 100 and EN 101.

EN 097**Academic Foundations English 1 (4/4)**

The review and development of language skills necessary for proficient writing. Classroom instruction, practice, and tutoring in writing. Writing for a purpose, organizing the text and using standard mechanics are stressed.

EN 100**College Writing (3/4)**

Prerequisite: Competency in written English – Students are assigned personal writing based upon freewritings, journal writing and readings in various genres of literature and nonfiction. Autobiography, personal narratives, dialogues and informal scripts, personal essays, and I-centered research are some of the assignments designed to increase students' awareness of audience, of how writers adapt language for specific audiences, and of public written forms and conventions. Students electing EN 100 should be competent in written English; if not, they should elect Academic Foundations English 097.

EN 101**English Composition 1 (3/3)**

Prerequisite: Competency in written English – Students are assigned personal writing based upon freewritings, journal writing, and readings in various genres of literature and nonfiction. Autobiography, personal narratives, dialogs, informal scripts, personal essays, and I-centered research are some of the assignments designed to increase awareness of audience, of how writers adapt language for specific audiences, and of public written forms and conventions.

EN 102**English Composition 2 (3/3)**

Prerequisite: EN 100, EN 101 or equivalent – This course continues the personal approach to writing begun in English 100/101 but shortly extends to include more objective discourse. Includes essays, fiction, argumentation based upon personal experience, literary criticism, and academic and interdisciplinary research, and readings in various genres of literature and nonfiction. Students must pass English 100, English 101, or the equivalent before enrolling in EN 102.

EN 233**Poetry (3/3)**

This course is an introductory genre study of poetry. The material is addressed through the function and purpose of poetic elements such as voice, diction, imagery, figures of speech, sound, rhythm, form, and so forth. The course will show how poetry functions in historical, political and social contexts. The course will also increase students' ability to understand and appreciate poetry as a form involving craft as well as creativity. The coursework involves listening, speaking, reading, writing and discussing.

EN 235**Drama (3/3)**

An introduction to drama as an important art form and as a literary genre, using masterpieces by ancient through contemporary playwrights. Plays are selected for their artistic merit and for their place in the historical development of drama. Students will write several papers about the plays, some of which they will view on film.

EN 237**Fiction (3/3)**

Various critical and thematic approaches will be used to help students to appreciate and understand the texts that are assigned. Students will be given instruction on how to read the texts. They will be encouraged to read published critical material. The instructor will help students understand the significant function of fiction in representing societies and cultures using a variety of texts.

EN 242**Popular Literature (3/3)**

Readings may include science fiction, western, mystery, suspense, detective, horror, romance, fantasy, magazines, comics, or the literature of advertising. Critical thinking skills are used to help determine differences between popular fiction and literal fiction.

EN 243**Essay Is Literature 1 (3/3)**

A workshop in advanced writing that emphasizes the personal essay, for students who intend to develop further their ability to write with precision, clarity, and voice. Workshop assumes students submit drafts in progress for oral and written responses from all other classmates and the instructor.

EN 244**Essay Is Literature 2 (3/3)**

A continuation of English 243 that, while still emphasizing individual voice and perception, will encourage students to expand the personal essay for personal comment on the broader community. Workshop assumes students submit drafts in progress for oral and written responses from all other classmates and the instructor.

EN 246**Writing for Publication (3/3)**

An introduction to researching, writing, and publishing nonfiction magazine articles for a variety of publishing markets.

EN 247**Creative Writing 1 (3/3)**

A study of the techniques of poetry and the short story aimed at guiding a creative person to the tools of self-expression. The course is flexible enough to invite other dramatic forms should the individual student indicate an interest in them.

EN 248**Creative Writing 2 (3/3)**

A continuation of English 247; a movement into more advanced techniques of writing poetry and the short story. Also, an introduction to the one-act stage play and/or screenplay.

EN 249**Technical Writing (3/3)**

Prerequisites: BU 101 and BU 102 or EN 100/101 and EN 102 or permission of instructor – Intended for students who wish to make a career of technical writing or to improve their writing abilities in their place of business. The course stresses writing clarity, accuracy, and comprehensiveness in the most common written forms of technical communications with appropriate visual writing style. May or may not be accepted as humanities credit by transfer institutions.

EN 250**Children's Literature (4/4)**

Students evaluate a variety of children's books for use across the curriculum, investigate children's book choices, become familiar with a wide variety of multicultural literature from the 14th century to the present, write critical analysis on a variety of topics, make oral presentations to the class, and complete other projects as assigned. Students may also participate in field trips and listen to presentations from field specialists.

EN 252**Shakespeare (3/3)**

An introduction to the study of the plays and poetry of William Shakespeare, and features the study of several plays with exercises in the sonnets, source study, and editing experience. The course explores the variety of dramatic modes in which Shakespeare worked, emphasizing both textual study and performance; some attention is also given to the Elizabethan and Jacobean context in which the author worked, and to his enduring influence on literature.

EN 261**Great American Writers 1 (3/3)**

This course examines writings by Native Americans (1500's to 1800's), colonial settlers (1600's to 1700's), revolutionary founders (1700's), African American (1700's to 1800's), and early American writers of fiction and poetry. These writings will be examined in both literary and historical contexts.

EN 262**Great American Writers 2 (3/3)**

A survey of American Literature from post Civil War to the present, with emphasis on American writers of the nineteenth and early twentieth centuries.

EN 270**Multicultural Literature (3/3)**

An introduction to literature by African Americans, Native Americans, Hispanics, Asian Americans, and Appalachian Americans and/or literature by African, Asian, or Latin American writers; focusing also on feminist, lesbian/gay, and differently labeled writings. Each semester specific cultures will be covered. Course will also focus on cultural and critical issues raised by these works.

EN 271**African-American Literature (3/3)**

This course is a survey of the African American literary landscape, focusing on the genres of fiction, poetry, drama, and nonfiction. The course will also review the historical backdrop against which these works were created. They will be read and analyzed within the context of the political, economic, and social perspectives of the United States in order for students to understand how these perspectives influenced African American literary expression.

EN 275**Theatre Workshop (Stratford/Shakespeare) (3/3)**

Students will study and discuss the literary aspects and theatrical complexity of four Shakespearean plays (preferably one each: tragedy, comedy, history, and tragicomedy) which they will view at the Stratford Shakespearean Festival in Stratford, Ontario, Canada. This class of genre depends on the current Stratford selection.

EN 281**Survey of British Literature 1 (3/3)**

Surveys the major works of British Literature from Anglo-Saxon times to the 18th century. A careful reading is done of representative texts. Papers and discussion center around the issues of language, the church, war, gender, social class, romance, history, politics, and literary forms.

EN 282**Survey of British Literature 2 (3/3)**

Surveys the major English Romantic poets, Victorian poets and prose writers, and represents modern trends and writers in British literature.

EN 295**Language and Literature of Great Britain (3/3)**

A tour of England, Scotland, Ireland, and Wales, highlighting various sites significant in English literature, such as London, Oxford and Stratford. Some stress will also be placed upon the development and dialects of British England, especially as they affect American English.

EN 298**Independent Study in English 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of English and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take EN 298. No student may earn more than two credits in independent study.

EN 299**Independent Study in English 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of English and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take EN 298. No student may earn more than two credits in independent study.

ES – ENGLISH AS A SECOND LANGUAGE**ES 101****English as a Second Language: Listening and Speaking 1 (4/4)**

Prerequisite: Placement test – This class is designed for students who have a limited understanding of English but need to develop basic communication skills. Students will focus on conversation skills used in everyday situations and practice listening, speaking, and pronunciation to make them more successful in these interactions.

ES 102**English as a Second Language: Listening and Speaking 2 (4/4)**

Prerequisite: Placement test or successful completion of ES 101 – This class works to help students have more comfortable and comprehensible interactions in English. Students will learn phrases and vocabulary used in specific situations. They will practice their listening, speaking, and pronunciation and learn how to improve these skills for better communication.

ES 103**English as a Second Language: Listening and Speaking 3 (4/4)**

Prerequisite: Placement test or successful completion of ES102 – This class will focus on advanced conversation skills and basic academic English. Students will practice conversation strategies and skills used in various situations with various levels of formality. They will learn note taking and oral presentation skills. In addition, pronunciation will be a major focus of this class.

ES 104**English as a Second Language: Listening and Speaking 4 (4/4)**

Prerequisite: Placement test or successful completion of ES 103 – This is an advanced course designed to prepare ESL students to succeed in courses outside of the ESL program. Students will work on academic skills such as lecture comprehension, note taking, presenting, and debating. Pronunciation clarity and accent reduction will also be a focus.

ES 111**English as a Second Language: Writing and Grammar 1 (4/4)**

Prerequisite: Placement test – The focus of this class is on writing at a sentence level. Students will focus on specific grammatical and mechanical points and use these points to create more comprehensible sentences. Sentences will also be combined to make simple paragraphs.

ES 112**English as a Second Language: Writing and Grammar 2 (4/4)**

Prerequisite: Placement test or successful completion of ES 111 – The focus of this class is on writing paragraphs. Topic sentences and supporting details will be discussed and used to create various types of paragraphs. Specific grammatical points will be taught and focused on in writing assignments.

ES 113**English as a Second Language: Writing and Grammar 3 (4/4)**

Prerequisite: Placement test or successful completion of ES 112 – The focus of this class is on writing an essay. Students will learn how to write an essay with an introduction, thesis, body paragraphs, and a conclusion. Students will also study various grammatical points and apply them to their writing.

ES 114**English as a Second Language: Writing and Grammar 4 (4/4)**

Prerequisite: Placement test or successful completion of ES 113 – In this class students will continue their work with essays. They will review and continue to practice the basic essay format and learn to write other modes of essays as well. Students will also study various advanced grammatical points and apply them to their writing.

ES 121**English as a Second Language: Reading and Vocabulary 1 (4/4)**

Prerequisite: Placement test – The focus of this class is on reading simplified English writing. Students will learn how to find answers to comprehension questions, summarize readings, find the main idea of a passage, and broaden their vocabulary.

ES 122**English as a Second Language: Reading and Vocabulary 2 (4/4)**

Prerequisite: Placement test or successful completion of ES 121 – The focus of this class is on improving reading skills. Students will use simplified texts to learn and practice various reading skills such as skimming, scanning, making inferences, and paraphrasing. They will also expand their vocabulary and learn various strategies to figure out new words.

ES 123**English as a Second Language: Reading and Vocabulary 3 (4/4)**

Prerequisite: Placement test or successful completion of ES 122 – The focus of this class is on improving reading skills and applying these skills to authentic texts. Students will practice skills such as skimming, scanning, inferring, paraphrasing and summarizing using mainly authentic texts. They will study stems and affixes as a way to understand a wider range of vocabulary and practice other vocabulary comprehension strategies.

ES 124**English as a Second Language: Reading and Vocabulary 4 (4/4)**

Prerequisite: Placement test or successful completion of ES 123 – The focus of this class is on improving reading skills and preparing students to succeed in classes outside of the ESL program. Students will develop critical reading skills through the study of authentic texts. They will work to master reading and vocabulary techniques needed to understand English texts at the college level.

ER – ENERGY MANAGEMENT AND CONSTRUCTION**ER 110****Basic Refrigeration (2/4)**

Students learn the basic theory of refrigeration system operation by classroom study as well as performing basic service operations on completed systems including refrigerant recovery, leak test, evacuate, and recharge. The student will also perform basic refrigeration grade tubing connections including soft solder, sil-foss, brazed, silver solder, and flare. There is a tool purchase requirement for this introductory HVACR course. Four hours lecture/lab.

ER 111**Refrigeration Applications (2/4)**

Prerequisite: ER 110 – Students study in detail refrigeration system components and their operation. Emphasis will be placed on all temperature ranges of equipment using different refrigerant types. Students will fabricate a complete refrigeration system from components as well as replace a compressor on a completed system. Four hours lecture/lab.

ER 121**Metallic and Nonmetallic Joining Techniques (2/4)**

Students learn the basic joining and fabrication methods for sheet metal, fiberglass, copper, plastic, and steel; typically used in the HVACR industry for air duct and piping systems. These methods include spot welding, riveting, screws, S-cleat, drive-cleat, Pittsburgh lock, button lock, gluing, soldering, brazing, and various fittings. The course will include a lab practice in fabrication and assembly of projects including various seam types. Four hours lecture/lab.

ER 128**Heating and Cooling Controls (3/6)**

Prerequisites: ER 135 and ER 136 or equivalent – A study of basic controls used in conjunction with heating and cooling systems. The course will include gas and oil heating control and conventional air conditioning control and troubleshooting. Six hours lecture/lab.

ER 135**Heating Theory/Application (2/4)**

Students learn the theory of heating operation and control of building indoor air quality. Principles of combustion of natural gas, LP gas, and fuel oil as well as thermal efficiency of heating appliances are studied. Troubleshooting and repair of heating equipment is applied to a variety of designs. Installation of fuel piping, vent systems, and combustion air requirements for various systems are discussed. Safety procedures are emphasized and applied as they relate to this trade. Four hours lecture/lab.

ER 136**Air Conditioning Theory (2/4)**

Students learn the theory of air conditioning operation for conventional and heat pump systems. Installation, system startup, troubleshooting and standard repair procedures are emphasized. Safe procedures are discussed and applied as they relate to this trade. Four hours lecture/lab.

ER 174**Mechanical Blueprint Reading and Sketching (3/4)**

Students learn to read construction blueprints concentrating on the mechanical portion of the blueprints. An emphasis is placed on heating, ventilating, air conditioning and refrigeration systems. Students will read existing prints, estimate materials, and draw mechanical systems into building prints. Four hours lecture/lab.

ER 221**Duct Construction and Design (3/6)**

A study and practice in the fabrication and design of air distribution systems and their components. The student will lay out, cut out, fabricate, and assemble an assortment of square and round duct fittings commonly used in the HVACR air delivery systems. The student will get classroom instruction in register location, designing duct systems, and sizing ducts for correct air flow. Six hours lecture/lab.

ER 230**HVACR Electronic Controls (3/4)**

Prerequisites: ER 128 and EL 144 –

Students study solid state electronic controls commonly used in refrigeration and air conditioning applications. Operation and troubleshooting of assembled components such as circuit boards, time delays relays, and programmable controllers will be emphasized. Four hours lecture/lab.

ER 246**Mechanical Codes (2/2)**

Prerequisites: ER 135 and ER 136 – The Michigan Mechanical Code: heating systems, ventilating systems, steam and hydronic systems, boilers and pressure vessels, appliances using gas, liquids and solid fuel, chimneys and vents, and mechanical refrigeration. Students review the current edition of the Michigan Mechanical Code book and apply “the code” to practical examples. Two hours lecture.

ER 250**Basic Boiler Operation (3/4)**

Prerequisite: ER 135 – A study and practice in the maintenance and operation of steam and hot water boilers; including hands-on practice in steam boiler operations, water pump service, and basic burner operations. An emphasis will be placed on students identifying and understanding the function of various boiler systems. Four hours lecture/lab.

ER 275**Commercial Refrigeration (3/4)**

Prerequisites: ER 110 and ER 111 –

Operating systems and components used in commercial refrigeration; compressor capacity and efficiency are emphasized; includes compressor tear-down and analysis, alternate refrigerants, add-on mechanical subcooling systems, defrost systems, enthalpy analysis, head pressure control, and ice machine installation and operation. Students are expected to complete a major lab project or to perform a series of shorter service operations. Four hours lecture/lab.

ER 276**Advanced Air Conditioning, Refrigeration and Heating (3/4)**

Prerequisites: ER 110, ER 111, ER 135 and

ER 136 – Use of psychometric charts to aid calculation of heat gain in residential and commercial buildings; calculation of room-by-room heat loss and design of hydronic heating systems; lab practice and burner service, pumps, boiler controls, design and service requirements for heat pumps, service and troubleshooting electronic ignition systems using flame rods and ultraviolet sensors, operation of various economizer systems. Four hours lecture/lab combination.

**FM – FASHION
MERCHANDISING****FM 105****Introduction to Fashion and Interiors (3/3)**

An overview of the fashion industry. Clothing and interior furnishings are observed through books, speakers, and field trips. Retailing, manufacturing, and fashion publications are investigated in showrooms, company offices, retail businesses, and the classroom. Personal and professional development, knowledge, and skills are stressed.

FM 107**Clothing Selection and Design (3/4)**

For students entering the fields of fashion merchandising or design. Emphasis is placed on developing awareness, attitudes, and knowledge necessary to be successful in a career. Includes aspects of fashion history, fashion trends, terminology, designers, and grooming. Principles of line, design, and color are emphasized. Four hours lecture/lab.

FM 108**Clothing Construction (3/6)**

This course provides experience in the basic principles of clothing construction, altering and using patterns, and fitting of garments. Two hours lecture, four hours lab.

FM 110**Textiles (3/3)**

This course is designed to study natural and man-made fibers used in clothing and home furnishings. Emphasis is on end use and care of fabrics by consumers. Three hours lecture.

FM 111**Floral Design (1/1)**

This course would add applicable knowledge in designing and creating traditional and contemporary floral arrangements. It will broaden the students' knowledge and employment possibilities through mastering this skill.

FM 119**Sewing for Fashion (1/1)**

An introduction to the principles of clothing construction. With the use of a sewing machine and serger, students will construct simple garments. The student is responsible for the supplies necessary for projects.

FM 120**Fashion Designers (1/1)**

Students will study the biographies and design techniques of past and present designers.

FM 122**Merchandising Mathematics (4/4)**

Mathematical calculations used by retail merchants including the factors which determine a store's net profit or loss. Students learn several ratios used in a seasonal merchandise plan, determine various purchase discounts and shipping terms, calculate merchandise pricing and repricing amounts and percentages, and use several inventory valuation methods.

FM 180**Cooperative Education in Fashion Merchandising 1 (3/3)**

Prerequisite: Prior written permission of coordinator – Students participate in a cooperative program of work and learning involving area employers. They work a minimum of 15 hours a week (200 total hours) under supervision at approved employment, and their performance is monitored by the coordinator. In addition, attendance in the classroom is required one hour a week, or its equivalent. Students must have the written permission of the appropriate cooperative education coordinator before they register for this course.

FM 181**Cooperative Education in Fashion Merchandising 2 (3/3)**

Prerequisite: Prior written permission of coordinator – Students participate in a cooperative program directly related to their chosen field. They work a minimum of 20 hours a week (240 total hours) under supervision at approved employment, and their performance is monitored by the coordinator. In addition, attendance in the classroom is required one hour a week or its equivalent. Students must have the written permission of the appropriate cooperative education coordinator before they register for this course.

FM 213**Fashion Show Production (1/1)**

Students will organize and produce a fashion production for a designated audience. Students will be required to schedule time with models and clients outside of the regular class meetings.

FM 220**Fashion Promotion (4/4)**

Current trends in fashion promotion and display; principles of promotional activities, merchandising methods, use of photography, fashion show production, and display.

FM 228**Computer Assisted Fashion Design (3/4)**

Students learn to use computer components to generate drawings for apparel application; includes terminology, techniques, and applications of Computer Aided Design (CAD) in designing and drafting styles, patterns, and fabrics. Three hours lecture, one hour lab. Lab fee.

FM 230**Display and Visual Merchandising (4/4)**

In-depth study of store display and visual merchandise preparations; design principles of harmony, color, balance, and lighting. Applications to a variety of retail stores. Provides the knowledge, skills, and understanding to arrange functionally effective displays.

FM 236**Fashion Design (3/3)**

Prerequisite: Must know how to use a sewing machine – The study of fashion designers, the elements of design, past and present fashions, and basic design styles. The illustration and creation of simple design, using advanced sewing techniques.

FM 289**Fashion Exploration: New York City (1/1)**

Classes and appointments during a stay in New York City provide for acquisition of first-hand knowledge of the fashion industry and an opportunity for cultural enrichment. Students attend an orientation seminar, visit textile and accessory showrooms, a New York design studio, as well as other appointments as they relate to the fashion industry. A comparative merchandising analysis will be developed based on observations.

FM 290**Fashion Exploration: Chicago (1/1)**

Classes and appointments during a stay in Chicago provide for acquisition of first-hand knowledge of the fashion industry. Students attend an orientation seminar, visit textile and accessory showrooms, a design school, The Merchandise Mart and Apparel Center, as well as other appointments as they relate to the fashion industry. A comparative merchandising analysis will be developed based on observations.

FM 298**Independent Study in Fashion Merchandising 1 (1/1)**

Prerequisite: Permission of instructor – Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of fashion merchandising and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take FM 298. No student may earn more than two credits in independent study.

FM 299**Independent Study in Fashion Merchandising 2 (1/1)**

Prerequisite: Permission of instructor – Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of fashion merchandising and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take FM 298. No student may earn more than two credits in independent study.

FR – FRENCH**FR 101****Introductory French 1 (4/4)**

Introduction to French. French 101 introduces the pronunciation, vocabulary and basic grammar of French. In addition, the course treats the culture and geography of francophone countries. Listening comprehension and speaking are also emphasized with the aid of the International Language Laboratory.

FR 102**Introductory French 2 (4/4)**

Prerequisite: FR 101 or equivalent – A continuation of the study of French begun in French 101 or its equivalent. French 102 deepens understanding of the structure of the French language, increases vocabulary and provides opportunity for the student to increase speaking and comprehension skills as well as composition ability. Continued use of the International Language Laboratory.

FR 231**Intermediate French 1 (4/4)**

Prerequisite: FR 102 or equivalent – A global review of the structure of the French language and culture, emphasizing reading skills, conversational proficiency and accurate writing ability. French films are studied as well as modern French literature. Students use software in the International Language Laboratory.

FR 232**Intermediate French 2 (4/4)**

Continued global review of French language and culture. Extensive vocabulary growth and increased comprehension of spoken French. Proficiency in conversing about practical topics as well as in expression of personal opinions and ideas. International Language Laboratory is used for internet access in French and study of literary selections as well as modern French prose.

FR 298**Independent Study in French 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of French, must have the written permission of the supervising instructor, the appropriate Department Head/Program Director and the appropriate Dean before they register for this course. Students electing independent study for the first time should take FR 298. No student may earn more than two credits in independent study.

FR 299**Independent Study in French 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of French, must have the written permission of the supervising instructor, the appropriate Department Head/Program Director and the appropriate Dean before they register for this course. Students electing independent study for the first time should take FR 298. No student may earn more than two credits in independent study.

GE – GEOGRAPHY**GE 132****Physical Geography (4/4)**

The study of the physical systems which affect the world distribution of man and his habitat. The interrelationships of man with the natural system of air, water, land and space are viewed. The human use and misuse of the earth's resources are emphasized.

GE 135**World Regional Geography (3/3)**

A culturally oriented course surveying countries in their geographic regions. Study is directed at the realization that a national, regional, ethnic, religious, or linguistic group is but one of many, each group having different characteristics. Students are encouraged to view their own culture in a world perspective.

GE 140**Geography of Michigan (3/3)**

A description and analysis of the regional geography of Michigan. The variations and similarities throughout Michigan of physical, economic, political, and cultural phenomena are studied.

GE 210**Cultural Geography (3/3)**

Cultural geography is devoted to the description and explanation of spatial patterns and ecological relationships in human culture. Various cultural phenomena, both material and non-material in nature, will be examined within the context of the cultural landscape. Some emphasis is placed upon the origin, diffusion, and spatial distribution of religion, language, folk and popular customs, and ethnic groups. Population patterns, particularly in terms of development and global resources, are explored, as are issues pertaining to migration, gender, political geography, agriculture, industry, and settlement.

GE 253**Geography of the U.S. and Canada (3/3)**

The U.S. and Canada will be examined within the context of its physical environment and cultural landscape. Some emphasis will be placed upon immigration and ethnicity, folk and popular culture, and human impact on the environment.

GE 298**Independent Study in Geography 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of geography and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take GE 298. No student may earn more than two credits in independent study.

GE 299**Independent Study in Geography 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of geography and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take GE 298. No student may earn more than two credits in independent study.

GH – GENERAL HEALTH**GH 110****Medical Terminology 1 (2/2)**

Study of medical terms and meanings for students desiring to be medical secretaries or radiology technicians. Other medical positions include but are not limited to nursing, diagnostic imaging, medical transcription and the insurance industry.

GH 111**Medical Terminology 2: The Language of Medicine (2/2)**

Prerequisite: GH 110 – Equips members of the health care professions with a working knowledge of medical vocabulary; emphasizes anatomy and physiology, and deals specifically with each of the body systems and the diseases significant to them.

GH 120**Therapeutic Relationships (3/3)**

Introductory course for health students on how to establish and maintain therapeutic relationships. How to build rapport with patients and clients and use active skills, effective communication styles, interviewing and group process skills. Principles associated with the therapeutic environment such as confidentiality, ethics, patient advocacy, and team building are also stressed.

GH 125**Introduction to the Structure and Function of the Human Body (3/3)**

The study of the structure and function of the normal human body and the practices necessary to maintain normal health. Medical terminology of disorders related to each unit is included.

GH 126**Microbiology for Health Care (1/1)**

Prerequisite: GH 125 – Introduction to microbial life, pathogens and nosocomial infections. Methods of microbial control, spread of infection and use of universal precautions. Medical and surgical asepsis, immunity and body defense against disease.

GH 141**Spanish for Health Care (3/3)**

A practical course for non-Spanish speaking health care students stressing vocabulary, basic sentence structure and conversational drills. This course will teach the students to participate in everyday conversations with Spanish speakers while at the same time guiding them through the assessment and treatment process in health care. This course will also cover various aspects of the Hispanic culture. This course is not designed to transfer as a Spanish course within GRCC or outside the institution.

GH 298**Independent Study in General Health 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of general health and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take GH 298. No student may earn more than two credits in independent study.

GH 299**Independent Study in General Health 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of general health and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take GH 298. No student may earn more than two credits in independent study.

GL – GEOLOGY**GL 101****Introduction to Geology (4/6)**

An introduction to science for non-science majors and a first course for geology majors. Covers the basic principles of geology, including plate tectonics, rocks and minerals, weathering and erosion, glaciers, topographic and geologic maps, and geologic time. Three hours lecture/three hours lab. Offered Fall and Winter semesters.

GL 104**Historical Geology (4/6)**

A general survey of how our planet has changed over time. The course focuses on the methods and techniques used to interpret Earth's history. Topics include the geologic time scale, the history of life on Earth and the movement of the continents. Four hours lecture/two hours lab. Offered Winter semester, odd-numbered years.

GL 105**Environmental Geology (4/6)**

This course is designed as an introduction to current environmental issues in geology. It will cover topics such as volcanics, earthquakes, floods, landslides, effects of erosion, and mineral resources, along with basic geologic principles. Some of the activities in both lecture and lab will be group activities.

GL 298**Independent Study in Geology 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of geology and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take GL 298. No student may earn more than two credits in independent study.

GL 299**Independent Study Geology 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of geology and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take GL 298. No student may earn more than two credits in independent study.

GO – GERONTOLOGY**GO 261****Growing Old in a New Age (3/3)**

America is growing older. This course explores issues vital to this growing segment of our population with its myths and realities; love, intimacy, and sexuality in later years; social roles and relationships; work, retirement and economics; how the body changes in the aging process; and surviving growing older in contemporary America. GO 261 and SO 261 are equivalent courses. Students may not receive credit for both.

GO 262**Ageing in America (3/3)**

An analysis and description of the developing field of gerontology. The course consists of an in-depth study of needs of the elderly such as legal information, social security, tax relief, health, home and personal safety, nutrition and food purchasing, political power, mobilizing grass roots support groups, resources in the community for senior citizens, consumerism, and transportation. Discussions of the institutional interrelations that affect the elderly; analysis of changes needed in American society to aid senior citizens. GO 262 and SO 262 are equivalent courses. Students may not receive credit for both.

GO 263**Death and Dying (3/3)**

Illness and death can occur during all life stages. We need to be prepared. This class will cover historical perspectives, define death, attitudes toward death, dying process, grief and loss, etc. GO 263 and SO 263 are equivalent courses. Students may not receive credit for both.

GR – GERMAN**GR 101****Introductory German 1 (4/4)**

Introduction to German. German 101 introduces the pronunciation, vocabulary and basic grammar of German. In addition, the course treats the culture and geography of German-speaking countries. Listening comprehension and speaking are also emphasized with the aid of the International Language Laboratory. Computer-assisted study software and CD-ROM materials are used for study and practice outside of class.

GR 102**Introductory German 2 (4/4)**

Prerequisite: German 101 or equivalent – A continuation of the study of German. German 102 deepens understanding of the structure of the German language, increases vocabulary and provides opportunity for the student to increase speaking and comprehension skills as well as composition ability. Increased use of the International Language Laboratory. Computer-assisted study software and CD-ROM materials are used for study and practice outside of class.

GR 231**Intermediate German 1 (4/4)**

Prerequisite: GR 102 or equivalent – A global review of the structure of the German language and culture, emphasizing reading skills, conversational proficiency and accurate writing ability. Computer-assisted study software and CD-ROM materials are used for study and practice outside of class. Students use software in the International Language Laboratory for increased listening practice.

GR 232**Intermediate German 2 (4/4)**

Prerequisites: GR 102, GR 231 or equivalent – Continued global review of German language and culture. Extensive vocabulary growth and increased comprehension of spoken German. Proficiency in conversing about practical topics as well as in expressing personal opinions and ideas. Computer-assisted study software and CD-ROM materials are used for study and practice outside of class. Students use software in the International Language Laboratory for increased listening practice.

GR 298**Independent Study in German 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of German and must have written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take GR 298. No student may earn more than two credits in independent study.

GR 299**Independent Study in German 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of German and must have written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take GR 298. No student may earn more than two credits in independent study.

HS – HISTORY**HS 101****Western Civilization to 1500 (4/4)**

Basic introductory study of Western Civilization from its ancient roots in the Middle East to Reformation.

HS 102**Western Civilization since 1500 (4/4)**

Basic introductory study of Western Civilization from the Reformation to the contemporary age.

HS 240**The Course of Irish History (3/3)**

A general survey of Irish history emphasizing political, economic and social developments, and religious, intellectual and cultural aspects of Ireland and the Irish from prehistory to the present.

HS 241**History of England from 55BC to 1714 (3/3)**

Survey of English History; HS 241 begins with pre history and ends with the Restoration. Political, economic, religious, social, intellectual and artistic themes are covered.

HS 242**History of England post 1783 (3/3)**

Survey of English History; HS 242 begins with the Restoration and finishes with the end of the twentieth century. Political, economic, religious, social, intellectual, and artistic themes are covered.

HS 249**History of United States from Exploration through Reconstruction (3/3)**

Political, cultural, diplomatic, and social history of the U.S. and its people from the Age of Exploration through Reconstruction. A topical study actively involving students in the learning process.

HS 250**U.S. History from the End of Reconstruction to the Present (3/3)**

Political, cultural, diplomatic, and social history of the United States and its people from 1876 to the present. A topical study of forces and individuals responsible for continuity and change. A dynamic versus a static presentation.

HS 260**History of Michigan (3/3)**

Prerequisite: Sophomore standing or permission of instructor – History of Michigan from French exploration to the decade of the 1970's. Particular emphasis will be placed on the formative years of the 19th century, the development of an industrialized society in the 20th century, and integration of Michigan history with American history as well as with local history.

HS 276**History of Grand Rapids (3/3)**

History of the greater Grand Rapids area from prehistoric times to the present. The course will show how past events have shaped current events in our community. Course presentations will be in chronological order, emphasizing Native Americans, early European-American settlement, nineteenth century industrialization and urbanization, immigration and ethnic diversity, and Grand Rapids' twentieth-century evolution from furniture center to an economically and socially diversified metropolitan center. Also receiving attention will be the relationship between Grand Rapids history and state, national, and international events.

HS 290**History of Russia/Soviet Union (3/3)**

History of Russia and the Soviet Union from beginnings to the present.

HS 295**Modern World (3/3)**

Examines the major patterns of world history of the first half of the 20th century. The course depicts the era as a century of mass politics, better public health, technological revolution, mass entertainment and total war. Through a multicultural perspective and interviews with ordinary citizens, students learn how the major developments of the century have affected, and been affected by, the lives of the individuals, families and communities.

HS 298**Independent Study in History 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of history and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take HS 298. No student may earn more than two credits in independent study.

HS 299**Independent Study in History 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of history and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take HS 298. No student may earn more than two credits in independent study.

HU – HUMANITIES

HU – These courses also count as

Humanities credit:

AT 105, 106, 115

Any 200 level EN course

Any foreign language

MU 107, 109, 235, 236, 237

Any PL course

PO 105

SC 131, 135, 241

TH 240, 248, 249

HU 240**American Life on TV (3/3)**

Focus on the aesthetic qualities of the programs in terms of style, character, tone, visual imagery, and the reflection of culture. Students will view various television situation comedies with an eye toward critical commentary.

HU 270**Contemporary Arts and Ideas (4/4)**

Examines the broad category of the arts, especially as it pertains to contemporary painting, sculpture, architecture, film, television, dance, and literature. Deals with the relationship and continuity of structure and meaning in the contemporary arts with an acquaintance of their historical antecedents.

HU 273**Film Viewing and Construction (3/3)**

Prerequisite: EN 102 or sophomore standing – Classes consist of viewing and discussing ten or more feature length films and selected short films. The list, chronologically arranged, includes representative films from early comedy, the New Cinema, current films, the foreign film and the documentary. Two critical essays are required as well as a short original film.

HU 274**American Cinema Telecourse (3/3)**

An introductory course in film studies that uses ten one-hour television programs, a text, study guide and ten feature films to explore the visual style, narrative tradition, and cultural implications of American filmmaking through encounters with the work of such directors as John Ford, Howard Hawks, Martin Scorsese, and Steven Spielberg. Two half-hour supplementary programs will offer instruction in the technical vocabulary of filmmaking.

HU 280**The Art of Being Human (3/3)**

A nontraditional, introductory media course on the humanities. This highly visual lecture approach is appropriate for adult learners who seek to enjoy aspects of art, music, philosophy, drama, and literature. This course is interdisciplinary and is arranged thematically rather than chronologically.

HU 298**Independent Study in Humanities 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of humanities and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take HU 298. No student may earn more than two credits in independent study.

HU 299**Independent Study in Humanities 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of humanities and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take HU 298. No student may earn more than two credits in independent study.

IF – INTERIORS AND FURNISHING**IF 114****Visual Presentations for Interiors (1/1)**

Prerequisite: Drafting knowledge strongly recommended – An exploration of presentation tools, techniques and styles utilized in the interior decorating and design profession. Students will learn a variety of professional techniques and styles of color boards, blueprints and personal presentations, which will allow them to present their work in a professional manner.

IF 115**Consumer Buying (4/4)**

A study of the selection of equipment and furnishings used in the home. Emphasis on financial management—use of credit, insurance, investments, and division of family income.

IF 117**Housing and Home Furnishings (4/5)**

Selections and study of house plans, room arrangements, furniture, and furnishings with emphasis on aesthetic value.

IF 118**Lighting Fundamentals (1/1)**

The student is introduced to basic human factors, color and behavior of light. Lamps, fixtures, circuiting, and floor planning will be discussed.

IF 126**Furniture Design, Construction, and Marketing (2/2)**

A study of furniture, architecture, interiors, construction of furniture and fabrics from ancient times to the present. Includes tours of local furniture manufacturers.

IF 127**Drawing Techniques (3/3)**

The students will broaden their drafting and free-hand drawing skills along with quick rendering techniques that can be used when working with a customer presentation. Room plans, figures, furniture, textiles, and lettering styles are explored.

IF 128**Space Planning (3/3)**

Prerequisite: IF 117 – The study and application of the space planning process. Through involvement with a residential client, the student will develop a floor plan, electrical plan, dimension plan and a finish selection board. The emphasis is on developing a project from start to finish with a client. Commercial design will also be discussed.

IF 180**Cooperative Education in Interiors and Furnishings 1 (3/3)**

Prerequisite: Prior written permission of coordinator – Students participate in a cooperative program of work and learning involving area employers. They work a minimum of 15 hours a week (200 total hours) under supervision at approved employment, and their performance is monitored by the coordinator. In addition, attendance in the classroom is required one hour a week or equivalent. Students must have the written permission of the appropriate cooperative education coordinator before they register for this course.

IF 181**Cooperative Education in Interiors and Furnishings 2 (3/3)**

Prerequisite: Prior written permission of coordinator – Students participate in a cooperative program of work and learning involving area employers. They work a minimum of 20 hours a week (240 total hours) under supervision at approved employment, and their performance is monitored by the coordinator. In addition, attendance in the classroom is required one hour a week or equivalent. Students must have the written permission of the appropriate cooperative education instructor before they register for this course.

IF 216**Kitchen Design (1/1)**

An introduction to the kitchen design field. The student will study the concepts of space and design as it relates to kitchen layouts. Manual and computer application will be discussed.

IF 217**Office Design (1/1)**

An introduction to office layout and design, which is another aspect of the interior design and decorating employment arena. The student will become aware of the differences in residential interior design versus office design. Commercial standards, materials, concepts and furniture will be discussed. **Recommendation:** The student have a prior general knowledge of residential interior design and architectural blueprint reading skills.

IF 219**Sewing for Interiors (1/1)**

An introduction to basic sewing ideas for the home. With the use of the serger and sewing machines, interior enhancements will be explored. The student is responsible for the supplies necessary for projects.

IF 228**Computer Assisted Interior Design (3/4)**

Students learn to use computer generated graphics for interior design. They develop floor plans, elevations, and furniture arrangements; and design creations using terminology, techniques, and applications of Computer Aided Design (CAD).

IF 289**Interiors Exploration: New York City (1/1)**

Classes and appointments during a stay in New York City provide for acquisition of first-hand knowledge of the interior furnishings industry and an opportunity for cultural enrichment. Students attend an orientation seminar, visit furniture, textiles and accessory showrooms, and visit a New York design studio. A comparative merchandising analysis will be developed based on detailed observations.

IF 290**Interiors Exploration: Chicago (1/1)**

Classes and appointments during a stay in Chicago provide for acquisition of first-hand knowledge of the interior furnishings industry. Students attend an orientation seminar, visit a design school, the Merchandise Mart, and Apparel Center, as well as other appointments as they relate to the interiors industry. A comparative merchandising analysis will be developed based on detailed observations.

IF 298**Independent Study in Interiors and Furnishings 1 (1/1)**

Prerequisite: Permission of instructor – Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of interiors and furnishings and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take IF 298. No student may earn more than two credits in independent study.

IF 299**Independent Study in Interiors and Furnishings 2 (1/1)**

Prerequisite: Permission of instructor – Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of interiors and furnishings and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take IF 298. No student may earn more than two credits in independent study.

JR – JOURNALISM**JR 251****Introduction to Journalism (3/3)**

Prerequisite: None, although completing EN 101 and EN 102 is recommended – An introductory course in newspaper writing, paste-up and production, and production of the college newspaper.

JR 252**Advanced Journalism (3/3)**

Prerequisite: JR 251 – An advanced course in newspaper writing, based upon Journalism 251; and continued production of the college newspaper.

JR 253**Journalism: Internship (2/2)**

JR 253 allows students who are currently working as interns at newspapers, radio or TV stations to apply for, and receive, college credit. NOTE: Instruction provided by internship supervisors, TV stations, or newspapers.

JR 254**Mass Media (3/3)**

An introductory, overview course in the history and effects of mass media in the United States.

JR 255**Newspaper Production (2/2)**

This course provides college credit for students interested in helping produce the student newspaper, in ways other than reporting or writing. The course provides practical experience in technical, non-reporting aspects of journalism: newspaper page design and paste-up; newspaper graphic design, illustrating, and cartooning; or newspaper photography.

JR 256**Introduction to Broadcast Journalism (3/3)**

An introduction to the history, production techniques, and effects of radio and television programming. Includes writing for broadcast (audio and video), broadcasting regulations, broadcasting ethics. Students will research, write and produce at least one short program for radio or television and share it with the class. Primarily a lecture course, not a studio-based course.

JR 257**Reporting (3/3)**

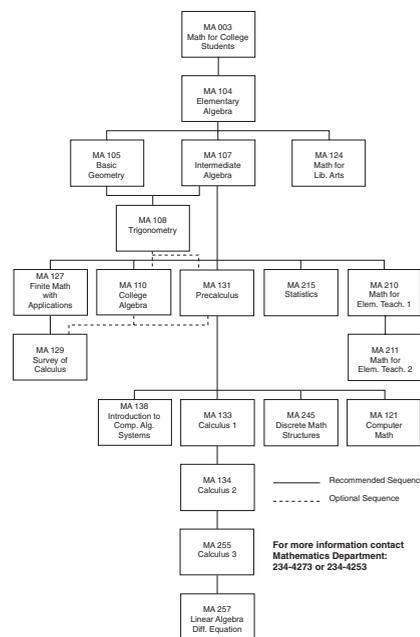
Prerequisite: EN 102 – A course in researching, reporting, and writing news stories for newspapers. Includes beat reporting techniques, backgrounding individuals, using public records and documents in reporting, interviewing, using computers and databases in reporting, and legal and ethical problems and responsibilities.

JR 298**Independent Study in Journalism 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of journalism and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director and the appropriate Dean before they register for this course. Students electing independent study for the first time should elect JR 298. No student may earn more than two credits in independent study.

JR 299**Independent Study in Journalism 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of journalism and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director and the appropriate Dean before they register for this course. Students electing independent study for the first time should elect JR 298. No student may earn more than two credits in independent study.

**LAW ENFORCEMENT
(See Criminal Justice)****LICENSED PRACTICAL
NURSING
(See Practical Nursing)****MA – MATHEMATICS****MA 003
Mathematics for
College Students (4/4)**

MA 003 is a review of arithmetic fundamentals. Topics include the arithmetic of fractions, decimals, order of operations, ratios, proportions, percent and integers; applications of introductory geometry, measurement and statistics; and, an introduction to polynomial expressions, solving linear equations, linear relationships, the rectangular coordinate system and square roots. Work is done both with and without a calculator. Offered all semesters.

MA 104**Elementary Algebra (4/4)**

Prerequisite: Grade of “C” or better in MA 003 or equivalent – MA 104 is designed for students with one or two years of high school mathematics. It is also a good review for students who have not recently taken an algebra course. Topics in this course include problem-solving techniques, introductory data analysis, interpretation of graphs, operations with real numbers, square roots, equations, formulas, ratio and proportion, linear inequalities in one variable, solving linear equations, graphing linear equations in two variables, slope of a line, equation of a line, systems of linear equations, linear modeling, integer exponents, scientific notation, operations on polynomials, factoring, and solving quadratic equations. A scientific calculator will be used in this course. Transferability is determined by transfer institutions. Offered all semesters.

MA 105**Basic Geometry (4/4)**

Prerequisite: Grade of “C” or better in MA 104 or equivalent – MA 105 is designed to provide students with a better understanding of basic geometry facts and mathematical reasoning. It is a good refresher course for students intending to take Trigonometry. Topics include an investigation of the properties and relationships in two- and three-dimensional figures, angles, triangles, circles, polygons, convex sets, ratio and proportion, area, and volumes. The concepts of definition, postulate, theorem, and corollary are explored relative to their role in building a mathematical system. Transferability is determined by transfer institutions. Offered Winter semester.

MA 107**Intermediate Algebra (4/4)**

Prerequisite: Grade of “C” or better in MA 104 or equivalent – MA 107 is designed for students who have had three years of high school mathematics. Topics in this course include first degree equations and inequalities, functions, variation, probability and counting techniques, polynomials, rational expressions, rational exponents and roots, radicals, quadratic functions, exponential functions, and curve fitting. A graphing calculator is required for this course. Offered all semesters.

MA 108**Trigonometry (2/2)**

Prerequisite: Grade of “C” or better in three years of college preparatory mathematics including geometry or MA 105 and MA 107 – MA 108 is designed to prepare students for higher-level mathematics courses, especially for those who plan to take calculus. Topics include angular measure, development of trigonometric functions, trigonometric identities, reductions, radian measure, variation and graphs of trigonometric functions, functions of composite angles, identities including composite angles, right triangles and applications, oblique triangles and applications, trigonometric equations, and inverse trigonometric functions. Offered all semesters.

MA 110**College Algebra (4/4)**

Prerequisite: Grade of “C” or better in three years of college preparatory mathematics or MA 107 – MA 110 is designed primarily for students whose program does not require any mathematics above the level of College Algebra. Topics include: graphing data, data analysis, solving equations, solving inequalities, functions, combinations of functions, polynomial functions, rational functions, power functions, exponential functions, logarithmic functions, systems of equations, matrices, sequences, and series. Some probability and counting may also be included. Use of graphing calculators and current technology will be emphasized. Note: Students in Business, Accounting, Management, and Social Sciences should elect MA 127 (Finite Mathematics) and students who plan on taking MA 133 (Calculus 1) should elect MA 131 (Pre-calculus). Offered all semesters.

MA 124**Mathematics for Liberal Arts Students (4/4)**

Prerequisite: Grade of “C” or better in one year of high school algebra or MA 104 – MA 124 is intended for students majoring in the liberal arts or other fields that do not have a specific mathematics requirement. Its purpose is to give students a broad exposure to a variety of applications of mathematics in the real world. Topics include voting methods, apportionment, mathematics of finance, number theory, shapes and patterns in geometry, networks and directed graphs, counting methods, probability, and statistics. Offered Fall and Winter semesters.

MA 127**Finite Mathematics with Applications (4/4)**

Prerequisite: Grade of “C” or better in two years of high school algebra or MA 107 – MA 127 is designed to give business, economics, management, life sciences, and social sciences students a background in finite mathematics and is a degree requirement at many transfer institutions. Topics include linear functions, mathematical models, systems of linear equations and inequalities, matrices, linear programming using both the graphical and the simplex methods, mathematics of finance, sets, counting principles, concepts of probability, and statistics. This course is the recommended prerequisite for MA 129. Offered all semesters.

MA 129**Survey of Calculus (5/5)**

Prerequisite: Grade of “C” or better in at least four years of college preparatory mathematics or MA 110 or MA 127 – MA 129 is intended for students majoring in business, economics, life sciences, and social sciences. Topics in this course include limits of functions, differentiation and integration of polynomial, exponential, and logarithmic functions. Curve sketching, optimization, related rates, and some techniques of integration are also studied. Applications of integration include area, growth and decay, and differential equations. A graphing calculator is required for this course. MA 129 is not intended for those curriculums requiring a mathematics major; students in such a curriculum should elect MA 133, 134, 255, and 257. Offered all semesters.

MA 131**Precalculus (5/5)**

Prerequisite: Grade of “C” or better in three years of college preparatory mathematics or MA 107 – MA 131 is designed for students who intend to enroll in the calculus sequence (MA 133, MA 134, MA 255). Expressions and functions investigated in this class are polynomial, rational, radical, trigonometric, exponential, and logarithmic. Logic, set theory, and the language and structure of mathematics will also be studied. Applications will be introduced throughout the course. Graphing calculators will be utilized to enhance understanding and gain insight through explorations. Offered all semesters.

MA 133**Calculus with Analytic Geometry 1 (5/5)**

Prerequisite: Grade of “C” or better in 4 years of college preparatory mathematics or MA 131 – MA 133 is the first of a three semester sequence in differential and integral calculus. Topics covered are limits, continuity, and differentiation with applications involving algebraic, trigonometric, logarithmic, and exponential functions. In addition antidifferentiation and definite integrals will be introduced. A graphing calculator is required. This course is required for students majoring in mathematics, engineering, physics, computer science, architecture, or actuarial sciences. Offered all semesters.

MA 134**Calculus with Analytic Geometry 2 (5/5)**

Prerequisite: Grade of “C” or better in MA 133 – MA 134 is a continuation of the calculus sequence and places emphasis on integration. Topics covered are techniques of integration, applications of the definite integral, parametric equations, polar coordinates, indeterminate forms, improper integrals, and infinite sequences and series. Offered all semesters.

MA 138**Introduction to Computer Algebra Systems (1/1)**

Prerequisite: Grade of “C” or better in MA 110 or MA 131 – MA 138 is a hands-on introduction to the computer algebra system MAPLE. By completing a sequence of six modules, students will learn how to use commands such as plot, solve, evaluate, and substitute, and will also learn how to use loops, the on-line menu, and text writing. The course will utilize Windows and will incorporate Windows features such as Paint. It is useful for students who wish to use MAPLE in calculus and for those planning a career in mathematics, science, or engineering. Offered Fall and Winter semesters.

MA 210**Mathematics for Elementary Teachers 1 (4/4)**

Prerequisite: Grade of “C” or better in MA 107 or equivalent – MA 210 is designed to provide pre-service teachers with a conceptual framework for elementary mathematics. This is accomplished through the use of appropriate manipulatives in a laboratory setting. Topics include problem solving, fundamental concepts and structures of number systems, study of sets, systems of whole numbers, integers, rational numbers, decimals, number theory and real number system. Offered all semesters.

MA 211**Mathematics for Elementary Teachers 2 (4/4)**

Prerequisite: Grade of “C” or better in MA 107 or equivalent – MA 211 is designed to provide pre-service teachers with the fundamental concepts of probability, counting, statistics, geometry and systems of measurement. Emphasis is on developing understanding through exploring and modeling using appropriate manipulatives and technology, as well as the historical evolution of concepts. Hands-on laboratory activities are incorporated. This course is designed for those students intending to obtain elementary teaching certification. Offered all semesters.

MA 215**Statistics (4/4)**

Prerequisite: Grade of “C” or better in MA 107 or equivalent – MA 215 is designed for students needing an introductory (not calculus-based) statistics course. Topics include descriptive statistics, probability distributions, estimation, sampling distributions, hypothesis testing, regression and correlation, chi-square tests, and analysis of variance. In addition, students will solve applied problems by completing required computer assignments using statistical computing software. Applications apply to all fields, including education, social sciences, business, engineering, medicine, and the sciences. Offered all semesters.

MA 245**Discrete Mathematical Structures (4/4)**

Prerequisite: A grade of “C” or better in MA 129 (Survey of Calculus) or MA 131 (Precalculus) – Mathematical logic, sets, functions, combinatorial mathematics, recurrence relation, mathematical induction, graphs, digraphs, trees and algorithms. This course transfers to four-year institutions. Offered Winter semester.

MA 255**Calculus with Analytic Geometry 3 (4/4)**

Prerequisite: Grade of “C” or better in MA 134 – MA 255 is designed to introduce students to two main areas of study: multivariable calculus and vector calculus. Topics included in the first area are partial derivatives, multiple integrals, directional derivatives and gradients, maximums and minimums, cylindrical and spherical coordinates, lines, planes, and quadric surfaces. Topics included in the second area are dot and cross products, vector valued functions, vector fields, line and surface integrals, curl and divergence, Green’s Theorem and Stokes’ Theorem. Offered all semesters.

MA 257**Differential Equations and Linear Algebra (4/4)**

Prerequisite: Grade of “C” or better in MA 255 – MA 257 is designed to introduce students to two areas of mathematics. The first covers ordinary differential equations and includes linear, separable, homogeneous and exact equations as well as systems of differential equations and solutions by series, numerical methods, and Laplace transforms. The second deals with linear algebra and includes systems of linear equations, matrices, determinants, vector spaces, linear transformations and eigenvectors. Both areas incorporate applications when appropriate. Offered all semesters.

MA 298 Independent Study in Mathematics 1 (1/1)

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of mathematics and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take MA 298. No student may earn more than two credits in independent study.

MA 299 Independent Study in Mathematics 2 (1/1)

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of mathematics and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take MA 298. No student may earn more than two credits in independent study.

MN – MANUFACTURING

MN 100 Manufacturing Principles (2/2)

A study of manufacturing principles which include, but are not limited to, team development and problem solving. The ability to work in teams, including interpersonal and organizational skills, is stressed. The student will also learn project management.

MN 116 Welding (2/4)

Fundamentals of oxyacetylene, electric arc, and inert gas welding. Students gain basic skills in gas and arc welding and the ability to discern sound welding design. They also learn standards for safe welding practices.

MN 116A Welding Module A (1/2)

A study of oxyacetylene welding equipment and materials. Emphasizes skills needed to adjust equipment and perform safely while gas welding, brazing, and silver soldering on a variety of metals in various positions. Flame cutting skills are also studied.

MN 116B Welding Module B (1/2)

Prerequisite: MN 116A – The fundamentals of electric arc and inert gas welding. Students gain basic skills in arc welding and the ability to discern sound welding design. They also learn standards for safe welding practices.

MN 119 Introductory Machine Operations (4/8)

Operation of basic metal-removing machinery, cutting tool construction, selection of speeds and feeds, precision measurement, numerical control programming, carbide tooling, and EDM machine. Eight hours lecture/lab.

MN 119A Introductory Machine Operations Module A (1/2)

An introduction to the machine shop and manufacturing shop floor environment. Special emphasis is placed on general safety procedures and recognition of hazardous materials. Proper use of hand tools, measurement tools and layout tools is emphasized. Additionally, the student will learn the general capabilities of milling, turning, and grinding machines.

MN 119B Introductory Machine Operations Module B (1/2)

Prerequisite: MN 119A – Students study and apply the fundamentals of metal cutting and the applications of cutting tools. Specific training in the proper use of common machine tools follows this. These machines include power saws, lathes, universal mills, drill presses, and grinders.

MN 119C Introductory Machine Operations Module C (1/2)

Prerequisite: MN 119B – Students will study advanced operations of common machine tools. Special tooling, setups, and fixturing methods are introduced. Additionally, larger and more powerful machine tools are used on the projects; tighter tolerances and better surface finishes are required.

MN 119D Introductory Machine Operations Module D (1/2)

Prerequisite: MN 119C – Students will be introduced to the CNC machine tools. Students will use the CNC Hurco mills in both manual and conversational modes. The basic concepts of CNC setup and operation are covered.

MN 134 Oxy-acetylene Welding (3/4)

A study of oxyacetylene welding equipment and materials. Emphasizes skills needed to adjust equipment and perform safely while gas welding, brazing, and silver soldering on a variety of metals in various positions. Flame cutting skills are also studied. Four hours lecture/lab.

MN 134A Oxy-acetylene Welding Module A (1/1.25)

A study of oxyacetylene welding equipment and materials. Emphasizes skills needed to adjust equipment and perform safely while gas welding a variety of metals in various positions. All welds will be based on American Welding Society standards for quality.

MN 134B Oxy-acetylene Welding Module B (1/1.25)

Prerequisite: MN 134A – A study of oxy-acetylene welding equipment and materials. Emphasizes skills needed to adjust equipment and perform safely while gas welding a variety of metals in various positions. All welds will be based on American Welding Society standards for quality.

MN 134C Oxy-acetylene Welding Module C (1/1.5)

Prerequisite: MN 134B – A study of oxy-acetylene welding equipment and materials. Emphasizes skills needed to adjust equipment and perform safely while brazing, silver brazing and cutting. All welds and cuts will be based on American Welding Society standards for quality.

MN 136 Basic Arc Welding (4/8)

A study of the theory of arc welding and power supplies used. Emphasizes methods of performing various types of welds on flat work and also in various positions on a variety of metals. Eight hours lecture/lab.

MN 136A Basic Arc Welding Module A (2/4)

A study of the theory of arc welding. Power supplies and electrodes are emphasized. Proper procedures for performing various welds in all positions will be emphasized. All welds will be based on American Welding Society standards for quality.

MN 136B**Basic Arc Welding Module B (2/4)**

Prerequisite: MN 136A – A study of the theory of arc welding. Electrodes and welding metallurgy will be emphasized. Proper procedures for performing various welds in all positions will be emphasized. All welds will be based on American Welding Society standards for quality.

MN 137**Fundamentals of TIG and MIG Welding (4/8)**

Proper assembly of the equipment used in Gas Metal Arc Welding and Gas Tungsten Arc Welding. Includes safe operation, proper welding procedures, and techniques used in welding carbon steel, aluminum, and stainless steel. This is an advanced course. All student performances will be held to the American Welding Society standards of performance in the welding of coupons and testing.

MN 137A**Fundamentals of TIG and MIG Welding Module A (1/2)**

Proper assembly of the equipment used in Gas Tungsten Arc Welding. Includes safe operation, proper welding procedures and techniques used in welding carbon steel and stainless steel. This is an advanced course. All student performances will be held to the American Welding Society standards of performance in the welding of coupons and testing.

MN 137B**Fundamentals of TIG and MIG Welding Module B (1/2)**

Prerequisite: MN 137A – Proper assembly of the equipment used in Gas Tungsten Arc Welding. Includes safe operation, proper welding procedures and techniques used in welding aluminum. This is an advanced course. All student performances will be held to the American Welding Society standards of performance in the welding of coupons and testing.

MN 137C**Fundamentals of TIG and MIG Welding Module C (1/2)**

Prerequisite: MN 137B – Proper assembly of the equipment used in Gas Metal Arc Welding. Includes safe operation, proper welding procedures and techniques used in welding steel. This is an advanced course. All student performances will be held to the American Welding Society standards of performance in the welding of coupons and testing.

MN 137D**Fundamentals of TIG and MIG Welding Module D (1/2)**

Prerequisite: MN 137C – Proper assembly of the equipment used in Gas Metal Arc Welding and Flux Cored Arc Welding. Includes safe operation, proper welding procedures and techniques used in welding carbon steel. This is an advanced course. All student performances will be held to the American Welding Society standards of performance in the welding of coupons and testing.

MN 138**Welding, Fabrication, Design, and Testing (4/8)**

Prerequisite: MN 136 – A study of the elements of weldments, fabrication, the analysis and design of weldments, and the welding and testing of AWS test plates in all positions using E6010 and E7018 SMAW electrodes.

MN 140**Pipe Welding (5/8)**

Prerequisites: MN 136 and MN 138 – Students develop skills in pipe welding in different positions, including the 5G and 6G positions, using 6010 and 7018 electrodes. Eight hours lecture/lab.

MN 146**Introduction to Robotics (3/3)**

Development of industrial robots, basic characteristics, unit configurations, functional differences, structure, power sources, controls, user justification, applications, social environmental aspects, and the future of industrial robots. Three hours lecture/lab.

MN 165**Plastics Testing (4/4)**

Prerequisite: MN 220 or equivalent – The identification and testing of plastics; emphasizes procedures that familiarize students with mechanical, thermal, electrical, chemical, optical, and weathering properties of plastics. Follows ASTM guidelines. Four hours lecture/lab.

MN 179**Blueprint Reading for Welders (2/4)**

A study of Graphic Language used in industry using orthographic and pictorial representations. Heavy emphasis is placed on abbreviations and symbols used in the welding industry.

MN 199**Theory of Machine Shop (3/4)**

Basic machine operation including safety, machine planning, sequencing, operation, speeds, feeds, and part production. Four hours lecture/lab.

MN 200**Intermediate Machine Operations (4/8)**

Prerequisite: MN 119/MN 199 or equivalent machine shop experience; TE 103/104 or equivalent shop math – This class covers intermediate metal removal operations and processes, including applications of CNC and EDM. Special emphasis is placed on applying these processes towards the maintenance of industrial tools and machines. Eight hours lecture/lab.

MN 200A**Intermediate Machine Operations Module A (1/2)**

Prerequisites: MN 119 or MN 199 or equivalent – This module teaches the principles of EDM machining as they apply to both conventional and wire EDM machines. Students will learn about electrode preparation, flushing, setup, and operation of EDM machines.

MN 200B**Intermediate Machine Operations Module B (1/2)**

Prerequisite: MN 200A – This module teaches advanced machine tool operations and accessories. Included are dividing heads, compound vises, and use of special cutters. Special machine tool applications such as duplication, cylindrical grinding, tool post grinding, and advanced lathe applications will be taught.

MN 200C**Intermediate Machine Operations Module C (1/2)**

Prerequisite: MN 200B – Projects will be completed on the CNC machining and turning centers using both conversational and G-code programs. Four-axis milling and high-performance tooling will be demonstrated. Macros, subroutines, and programming variables will be introduced.

MN 200D**Intermediate Machine Operations Module D (1/2)**

Prerequisite: MN 200C – Stamping dies, molds, and fixtures will be machined and assembled in this module. Students will work on projects as a team and will apply many of the concepts learned in previous modules.

MN 217**Hydraulics (3/6)**

Fundamentals of moving fluids and hydraulic power, design of hydraulic pumps, operation of hydraulic valves, selection of cylinders, motors, accumulators, and the design of hydraulic circuits. Six hours lecture/lab.

MN 217A**Hydraulics Module A (1/2)**

Introduction to the fundamentals of hydraulics. Students will study the principles of pressure, force, and flow as they apply to basic hydraulic systems.

MN 217B**Hydraulics Module B (1/2)**

Prerequisite: MN 217A or equivalent – Introduction to the different types of hydraulic pumps and actuators. The student will study how the various types of hydraulic pumps and actuators differ in design and operation. Also, the student will learn what hydraulic contamination control is and why it is important to the maximum operational longevity of hydraulic equipment. In addition, the student will study hydraulic reservoirs.

MN 217C**Hydraulics Module C (1/2)**

Prerequisite: MN 217A and MN 217B or equivalent – Introduction to different categories and types of hydraulic valves. The student will study directional control valves, pressure control valves, and flow control valves. Also, the student will study hydraulic fluid conductors, seals, accumulators, and intensifiers.

MN 218**Pneumatics (3/4)**

Fundamentals of moving fluids and pneumatic power. Students learn to design pneumatic compressors and pneumatic circuits. In addition, they also learn to operate pneumatic valves and to select proper pneumatic cylinders and motors. Pneumatic air preparation and distribution is also studied. Four hours lecture/lab.

MN 218A**Pneumatics Module A (1/1.33)**

Introduction to the fundamentals of pneumatics. Students will study the principles of pressure, force, and flow. Also, students learn why compressibility of a gas makes it a unique energy medium with its own special design requirements.

MN 218B**Pneumatics Module B (1/1.33)**

Prerequisite: MN 218A or equivalent – Introduction to the different types and operation of pneumatic compressors, after coolers, driers, receiver tanks, air distribution systems, actuators and directional control valves. Also, the student will learn how these components function in operational systems.

MN 218C**Pneumatics Module C (1/1.33)**

Prerequisite: MN 218B – Introduction to the different types of flow control valves, quick exhausts, regulators, excess flow valves, intensifiers, and sequence valves. The student will learn how the components function in operational systems. Also, the student will learn the different components related to proper air quality preparation.

MN 219**Survey of Polymer Technology (3/3)**

Students learn the basic chemistry of the most common polymers used in industry today. How thermoplastic and thermosetting polymers are formed is a key consideration. Also emphasized throughout this course are the physical and chemical behaviors of plastics as they relate to their applications.

MN 220**Basic Plastics Processing (3/6)**

Students will build on the concepts of plastics processing; the different types of plastics and the chemical makeup of plastics; the plastics industry as a whole; an in-depth discussion of where plastics are used and why; evaluation and selection of plastic materials, along with laboratory experiments in forming plastics.

MN 223**Injection Molding Theory (3/3)**

The theoretical and practical concepts relating to the production of plastic articles by injection molding; emphasis is on machine and peripheral equipment operation as they affect plastic part quality; includes properties of plastics and molding faults, with special emphasis on troubleshooting techniques.

MN 227**Advanced Hydraulics (2/2)**

Prerequisites: MN 217 or equivalent – Students will learn the operation, maintenance, and adjustment of cartridge, proportional, and servo valve systems. The students will also review advanced hydraulic principles, circuits, and applications.

MN 234**Metallurgy (3/3)**

Prerequisite: TE 103 and TE 104 – Application of metallurgical fundamentals to the machinability of common metals, the behavior of metals and cutting tools during machining operation; the behavior of metal under production conditions, fatigue, warpage, and their prevention.

MN 235**CNC and NC Machine Programming (3/4)**

Prerequisite: MN 119 – Students learn to program the manufacturing of a part from a part-print. Students learn to select proper machine setups on numerically controlled (CNC) machines and to machine parts to part-print specifications. Four hours lecture/lab combination.

MN 235A**CNC Machine Programming Module A (1/1.33)**

Prerequisite: MN 119 – A study of CNC milling involving coordinate systems, tooling, work setup, programming and program editing.

MN 235B**CNC Machine Programming Module B (1/1.33)**

Prerequisite: MN 235A – A study of CNC turning involving coordinate systems, tooling, work setup, programming and program editing.

MN 235C**CNC Machine Programming Module C (1/1.33)**

Prerequisite: MN 235A – Introduction to CNC applications using HURCO CNC mills. The basic concepts of CNC setup and operation with both manual and conversational control are covered. Basic operation of a RAM EDM is also covered.

MN 236**CAM Machine Programming (3/4)**

Prerequisite: MN 235 – Programming of CNC (computer numerically controlled) machines using part designs to create (2 1/2 axis) machine tool programs and test programs on the CNC machines. Four hours lecture/lab.

MN 237**CAM Operations and Processing (3/4)**

Prerequisite: MN 235 – Analysis of manufacturing processes to determine the most efficient in the computer aided manufacturing (CAM) process of parts. Four hours lecture/lab combination.

MN 238**Advanced CNC Programming Applications (3/4)**

Prerequisites: MN 119 and MN 235 – Students learn advanced CNC applications including programming, tool selection, program specifications for setup of machines, applied cutter compensations, sub-programming, canned cycles, and CAM (Computer Aided Manufacturing) programming. Four hours lecture/lab combination.

MN 242**Applied Injection Molding (4/6)**

Prerequisite: MN 165 and MN 223 – Using different molds in injection molding machines, students duplicate industrial standards to obtain the highest-quality parts with the shortest-possible cycle times. Experiments demonstrate injection molding theories learned in MN 223. Six hours lecture/lab.

MN 244**Advanced Plastics Processing (4/6)**

Prerequisites: MN 220 – Students set up and operate thermoforming, extrusion, and blow molding machines, gaining practical experience similar to that encountered in industry. Six hours lecture/lab.

MN 246**Injection Molding Machine Maintenance (3/4)**

Prerequisites: EL 144 and MN 217 – Students learn basic electrical and hydraulic principles; electrohydraulic and cartridge systems; and general operational maintenance of injection molding machines and peripherals. Four hours lecture/lab combination.

MN 248**Quality Assurance (3/3)**

Prerequisite: High school algebra or equivalent – The role of the modern quality assurance department, and the tools and skills required in quality assurance today; how standards are set, how to take samples and calculate statistical information, sample statistics, measurements, and procurement procedures included. Three hours lecture. Student will need a scientific calculator; no prior knowledge of statistics is required.

MN 249**Statistical Process Control (3/3)**

Prerequisite: High school algebra or equivalent – Simple statistical procedures for the control of manufacturing processes; data are gathered from processes, product flow charts, and cause-and-effect diagrams for the construction of Pareto charts, pie charts, histograms, variable charts, and attribute charts. Students learn to interpret SPC data. Student will need a scientific calculator; no prior knowledge of statistics is required.

MN 251**Gauges for Measurements (1/2)**

Students learn to use the common measuring tools encountered in quality science operations. These include calipers, micrometers, and height and depth gauges. Also, an introduction to the use of a coordinate measuring machine. Correct measuring techniques as well as tool care and maintenance are emphasized for each measuring tool. Two hours lecture/lab combination.

MN 252**Geometric Tolerancing (2/2)**

Prerequisites: High school algebra and geometry, CO 101 or equivalent – Students learn the system of geometric dimensioning and how conventional and geometric tolerancing work together to assure uniformity of fit, function, and producibility of manufactured parts. Students learn to confirm tolerances and solve problems in quality assurance. Two hours lecture.

MN 253**Applied Quality Techniques 1 (3/3)**

Students apply their knowledge of managerial process control to solve actual industrial problems and learn to troubleshoot a manufacturing process using management theory. Students also learn techniques and theories of continuous quality improvement. Review of materials in preparation for the ASQC (Quality Technician Certification Examination) is also part of the course. Student will need a scientific calculator; no prior knowledge of statistics is required.

MN 254**Experimental Design (3/3)**

Prerequisite: MN 248, MN 249, and MN 253 – Students learn the statistical concepts of experimental design, starting with the classical approach and working up to the latest experimental design techniques of Taguchi and Shainin. How to apply specific experimental designs to specific applications, and how to modify experimental design models. Three hours lecture. Student will need a scientific calculator; no prior knowledge of statistics is required.

MN 255**Applied Quality Techniques 2 (3/3)**

Prerequisite: MN 253 – Students continue learning to apply statistics to problems of quality control. Topics include advanced statistical applications, manufacturing, hypothesis testing, inspection theory, regression, probability and measurement/sampling theory.

MN 256**Introduction to Coordinate Measuring Machines (2/2)**

Prerequisites: DR 170, TE 103, MN 251, and MN 252 – Students learn the basics of coordinate measuring machine (CMM) operation, coordinate systems, stylus calibration feature measurement, programming and report generation. The maintenance and basic types of coordinate measuring machines are discussed.

MN 256A**Introduction to Coordinate Measuring Machines Module A (1/1)**

Prerequisites: DR 170, MN 251, and TE 103 – Students learn the basics of coordinate measuring machine (CMM) operation, coordinate systems, stylus calibration, feature measurement. The maintenance and basic types of coordinate measuring machines are discussed.

MN 256B**Introduction to Coordinate Measuring Machines Module B (1/1)**

Prerequisites: DR 170, MN 251, and TE 103 – Students learn the basics of coordinate measuring machine (CMM) operation, coordinate systems, stylus calibration, feature measurement, programming and report generation. The maintenance and basic types of coordinate measuring machines are discussed.

MN 270**Paint Finishing Systems Design and Operation (3/3)**

Students learn accepted good practice in paint finishing system design and operation; sizing and materials of construction for ovens, washers, spray booths and conveyors; ventilation and air flow; heat source and control options; proper operation and maintenance of finishing system equipment.

MN 271**Powder Coating (3/3)**

Students learn powder coating technology with general information about the process and specific engineering practices in design and applications; types of booths and recovery systems, application equipment, controls and equipment features, powder types, their attributes and typical applications.

MN 272**Introduction to Liquid Coatings (3/3)**

Students learn the basic principles involved in use of liquid coatings on various substrates in industrial environments. Proper handling procedures and troubleshooting finishing problems are included.

MN 273**Paint Finishing and the Environment (3/3)**

Students study the environmental issues that directly affect the practice of industrial surface finishing. Government regulation, compliance coatings, pollution abatement, pollution prevention, and waste management are included.

MN 274**Paint Finishing Pretreatment (3/3)**

Students learn generally accepted operating practices of pretreatment systems used prior to organic finishing. Included are cleaning, phosphating, rinsing, and final rinsing as well as chemical and equipment maintenance. Recognition, evaluation, and a method to solve problems are emphasized.

MN 275**Liquid Application Equipment (3/3)**

Students learn manual and automatic liquid spray equipment; types of spray guns, automatic gun movers, automatic triggering, manual spray technique, electrostatic spray, color change, paint heaters, paint delivery and maintenance.

MN 276**Electrocoating (3/3)**

Students learn all aspects of the design and operation of an electrocoating system, including equipment sizing, operation, and control; electrocoating solution chemistry function and maintenance; post-rinse operation; cure ovens and overall system efficiency.

MN 298**Independent Study in Manufacturing 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of manufacturing and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take MN 298. No student may earn more than two credits in independent study.

MN 299**Independent Study in Manufacturing 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of manufacturing and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take MN 298. No student may earn more than two credits in independent study.

MU – MUSIC

NOTE: MU 190, 191, 192, 193, 194, 195, 196, 239, 240 and 294 may be taken up to four times. Credit will not be given beyond four semesters.

Courses numbered Music 189 through 196, and 294 are performance ensembles and open to all qualified Community College students. Music students should check with senior institutions regarding the transferability of these courses.

All music majors must take at least one performing ensemble from Music 191, 194, 195 for credit during each term, and having done so, they should be eligible to play or sing in all other performing groups for which they qualify and enjoy a status equal to students enrolled for credit.

MU 100**Basic Music Theory (3/5)**

A study of basic musical materials, scales, key signatures, intervals, triads, rhythm and pitch notation, ear-training and dictation. This course does not replace MU 101.

MU 101**Introduction to Music Theory 1 (3/3)**

Prerequisite: MU 100 or placement test; **Co-requisite:** MU 178 – This course is designed primarily for freshman music majors and minors. The course covers the fundamentals of music: scales, intervals, triads, and rhythm as well as providing an introduction to voice leading through first species counterpoint. The course is best taken concurrently with MU 178 - Aural Comprehension 1.

MU 102**Introduction to Music Theory 2 (3/3)**

Prerequisite: MU 101; **Co-requisite:** MU 179 – MU 102 is an integrated course designed primarily for freshman music majors and minors. The course deals with the development of part-writing skills through further studies in species counterpart and our-voice choral texture. Students will learn to harmonize melodies and develop good chord progressions with triads and seventh chords. MU 102 should be taken concurrently with MU 179, Aural Comprehension 2.

MU 105**Music Interpretation (1/1)**

Co-requisite: Any Applied Music section – Individual performance class. Discussion of practice routines and habits, technical and stylistic problems, performance practice and memorization. Applied Music exemption by permission of department head only.

MU 107**Introduction to Music Listening 1 (3/3)**

This course teaches students how to listen to music effectively. The elements of music (melody, rhythm, harmony, etc.). During the semester many different types of music from several cultures and parts of the world will be examined. Outside reading, listening, and concert attendance are required. This course counts toward the Group 1 (humanities) requirement for the associate degree and is required for the Music Merchandising concentration of the Associate in Music degree.

MU 109**Jazz in Contemporary America (3/3)**

This course discusses the jazz experience, both for the listener and the performer. No prior knowledge of music is required. Jazz is demonstrated by live performers and by recordings. The student is acquainted with its history, styles and techniques. Jazz and society, jazz and culture, and jazz as an art form are discussed. The class may be chosen as a general humanities elective and is required for students in pursuit of the Music Merchandising concentration of the Associate in Music degree and the Recording Technology concentration of the Associate in Music degree.

MU 111—142**Applied Music Minor (1/1)**

Co-requisite: MU 105 – Secondary requirement in instrumental/voice/piano for music majors or elective for non-music majors; placement by instructor. Minor study requires a half hour lesson each week and one hour of practice/applied study each week. Applied Music fee is charged. Applied Music is independent study and Department consent is required.

MU 144**Music, Sound, and Computers (MIDI) (2/2)**

Students use the Musical Instrument Digital Interface (MIDI) equipped computing system to enhance communication through music and sound; apply fundamental music and computer skills to create a music and/or sound segment for incorporation into composition or presentation of choice; and use the MIDI system for synthesizer programming and digital sequence recording while gaining familiarity with MIDI computer software. Prior introductory experiences with both music and computers recommended. CO 144 and MU 144 are the same course. Students receiving credit for one cannot receive credit for the other.

MU 151**Applied Music Major (2/2)**

Co-requisite: MU 105 – This course is designed for students who study privately for credit as an applied music major. Principal requirement in instrumental/voice/piano for music majors or elective for non-music majors; placement by instructor. Major study requires an hour lesson each week and two hours of practice/applied study each day. Applied Music is independent study and department consent is required. An Applied fee is charged.

MU 152**Applied Music Major (2/2)**

Prerequisite: MU 151; **Co-requisite:** MU 105 – This course is designed for students who study privately for credit as an applied music major. Principal requirement in instrumental/voice/piano for music majors or elective for non-music majors; placement by instructor. Major study requires an hour lesson each week and two hours of practice/applied study each day. Applied Music is independent study and department consent is required. An Applied fee is charged.

MU 154**Basic Studio Techniques (4/5)**

Fundamentals of the recording arts, including basic audio signal and acoustics theory, recording consoles, microphone design and technique, and signal processing. Students work in on-campus lab and off-campus studios to complete lab assignments and projects. Department consent is required. Separate lab required. Lab fee.

MU 155**Basic Studio Techniques 2 (4/5)**

Prerequisite: MU 154 – The student will develop basic recording skills in microphone placement and choice, how proximity and acoustics affect sonic clarity, recording console use, use of various recording storage mediums, and how audio processing can improve sound image as well as re-create acoustic environments with digital reverberation. The objective of this course is to familiarize the student with the tools and applications of recording equipment in preparation for extensive musical instrument recording covered in the following semesters. This course explores the toolbox of the sound engineer. Department consent is required. Lab fee.

MU 161**Applied Music Major (2/2)**

Prerequisite: MU 152; **Co-requisite:** MU 105 – This course is designed for students who study privately for credit as an applied music major. Principal requirement in instrumental/voice/piano for music majors or elective for non-music majors; placement by instructor. Major study requires an hour lesson each week and two hours of practice/applied study each day. Applied Music is independent study and department consent is required. An Applied fee is charged.

MU 162**Applied Music Major (2/2)**

Prerequisite: MU 161; **Co-requisite:** MU 105 – This course is designed for students who study privately for credit as an applied music major. Principal requirement in instrumental/voice/piano for music majors or elective for non-music majors; placement by instructor. Major study requires an hour lesson each week and two hours of practice/applied study each day. Applied Music is independent study and department consent is required. An Applied fee is charged.

MU 169**Introduction to Piano (1/2)**

This class is for the student with no prior music-reading experience. It is taught with the assumption that the student has never played the piano. The emphasis is on introducing basic concepts of notation, musicianship, keyboard geography, and technique. Class meets two hours a week.

MU 171**Piano Techniques 1 (1/2)**

Development of piano techniques; sight-reading, use of primary chords, transposition, and acquisition of standard piano repertoire. For students with little or no keyboard background who have prior music-reading experience. Class meets two hours a week.

MU 172**Piano Techniques 2 (1/2)**

Prerequisite: MU 171 or permission of instructor – Continuation of MU 171, with greater emphasis on keyboard facility, sight-reading, and piano repertoire of various styles. Class meets two hours a week.

MU 173**Piano Techniques 3 (1/2)**

Prerequisite: MU 172 or permission of instructor – Continuation of MU 172, with greater emphasis on keyboard facility, sight-reading, and piano repertoire of various styles. Class meets two hours a week.

MU 174**Piano Techniques 4 (1/2)**

Prerequisite: MU 173 or permission of instructor – Continuation of MU 173. Repertoire of increased difficulty, simple accompaniments, and score reading. Class meets two hours a week.

MU 175**Classic Guitar 1 (1/2)**

Fundamentals of playing the instrument. Emphasis on building a workable foundation for using guitar as effectively as possible in a variety of musical styles. Meets two hours a week.

MU 177**Beginning Guitar (1/2)**

Fundamentals in the use and performance of the guitar as an accompaniment instrument. Designed for the person interested in performing appropriate chordal backgrounds on guitar. Proper guitar techniques, chords and chord theory, and accompaniment patterns and styles will be taught and analyzed through instruction and listening.

MU 178**Aural Comprehension 1 (1/2)**

Prerequisite: MU 100 or pretest;

Co-requisite: MU 101 – The students will develop their aural capacity through exercises in beginning melodic and rhythmic dictation. The ability to sing melodies on sight through the use of solfeggio will also be studied. This is the first of two courses in freshman aural skills designed to transfer to the four-year institution. Objectives of this course are concurrent with and complementary to MU 101. Additional music lab hours are required each week. Lab fee.

MU 179**Aural Comprehension 2 (1/2)**

Prerequisite: MU 178; **Co-requisite:** MU

102 – The student will continue developing aural capacity through exercises in intermediate melodic and rhythmic dictation. Mastery of solfeggio and curwin hand signs while singing intermediate melodies at sight will also be studied. This is the second of two courses in freshman aural skills designed to transfer to the four-year institution. Objectives of this course are concurrent with and complementary to MU 102. Additional music lab hours are required each week. Lab fee.

MU 189**Kent Philharmonia (1/3)**

The Kent Philharmonia is a community orchestra that consists of adult musicians and college students on a credit basis. The Philharmonia performs four concerts of major orchestral literature per year and is open by audition only. Students desiring to play should contact the conductor or manager in advance of registration.

MU 191**Choir (1/3)**

College Choir is a singing organization which concentrates on great choral classics, sacred and secular, and frequently joins the band and orchestra in rehearsals and performances. Membership is open to any GRCC student without audition and may be taken for college credit or for no credit.

MU 192**Madrigal Singers (1/2)**

A select group of singers who perform literature from many centuries. This organization also combines with instrumental ensembles. An active performance schedule is maintained throughout the year. Auditions are held the beginning of the Fall semester. Contact Department for more information.

MU 194**College Orchestra (1/2)**

The college orchestra studies and performs works from all periods of music, appropriate to the instrumentation of the ensemble. MU 194 is required of music majors whose primary instrument is violin, viola, cello, or string bass. Wind players may enroll with permission of the instructor. Non-music majors are encouraged to play in the ensemble and may enroll for credit.

MU 195**College Band (1/3)**

The College Band will perform works for Wind Ensemble from original and transcribed sources. MU 195 is required of instrumental music education majors who play a band instrument.

MU 196**Jazz Ensemble (1/2)**

Membership by audition held in the beginning of Fall semester. The jazz ensemble will rehearse and perform pieces in various styles and from various periods in jazz and big-band developments. Improvisation will be taught and emphasized in performance. Contact the department head for more information concerning the audition.

MU 197**Guitar Ensemble (1/2)**

The Guitar Ensemble studies and performs works from original and transcribed sources. Repertoire ranges from Renaissance through modern music. The ensemble has from 2 to 4 performances per semester. It is open to any student with a nylon string guitar who reads music. This course satisfies the ensemble requirement for students pursuing degrees in Music Merchandising or Recording Technology.

MU 200**Music for Classroom Teachers (3/4)**

Designed for elementary education students without regard to previous musical training. Students are prepared to use music functionally in the elementary classroom through singing, responding to music rhythmically, listening activities, and basic keyboard and informal instrument experience. Three hours lecture, one hour lab.

MU 201**Advanced Music Theory 1 (3/3)**

Prerequisite: MU 102; **Co-requisite:** MU 208 – This course is a continuation of MU 102. It extends the student's knowledge of species counterpoint, voice leading, and chromatic harmony as well as introducing the study of small part forms and larger complex forms. Students are expected to take MU 208-Aural Comprehension 3, concurrently with MU 201.

MU 202**Advanced Music Theory 2 (3/3)**

Prerequisites: MU 201; **Co-requisite:** MU 209 – This course is a continuation of MU 201. It extends student's knowledge of species counterpoint, voice leading and chromatic harmony as well as introducing the study of the harmonic, rhythmic and melodic materials of the late 19th and 20th centuries. Students are expected to take MU 209-Aural Comprehension 4, concurrently with MU 202.

MU 206**Piano Pedagogy 1 (2/2)**

Prerequisite: 5-6 years of piano study – For pianists currently teaching beginning and intermediate piano students and those who contemplate doing so. Deals with the necessary qualifications of the piano teacher, ways of developing pianistic techniques, and wise repertoire selection.

MU 207**Piano Pedagogy 2 (2/2)**

Prerequisite: MU 206 – A continuation of MU 206. Deals with the technical and musical problems of the intermediate and advanced piano student. A wide range of piano literature will be studied and analyzed as to its place in the literature, its technical and musical demands.

MU 208**Aural Comprehension 3 (1/2)**

Prerequisite: MU 179; **Co-requisite:** MU 201 – An advanced continuation of the aural skills learned in MU 179. Emphasis is on singing, aural identification and dictation of scales, intervals, harmonic progressions, melodic patterns, rhythmic patterns, triads and seventh chords. Development of intermediate sight-singing techniques as well as skills in notating performed melodic and harmonic musical examples. Weekly music lab required. Lab fee.

MU 209**Aural Comprehension 4 (1/2)**

Prerequisite: MU 208 and MU 201; **Co-requisite:** MU 202 – An advanced continuation of the aural skills learned in MU 208. Emphasis is on singing, aural identification and dictation of scales, intervals, harmonic progressions, melodic patterns, rhythmic patterns, triads and seventh chords. Development of intermediate/advanced sight-singing techniques as well as skills in notating performed melodic and harmonic musical examples. Weekly music lab required. Lab fee.

MU 215**Piano Pedagogy: The Intermediate Years (1/1)**

Prerequisite: 5-6 years of piano study – A study of teaching techniques and piano literature for the developing young student. Helps piano instructors analyze and perform literature which will aid the technical and musical growth of their students.

MU 235**History of Music 1 (3/3)**

The study of music in the Western world from its origins; Greek, Hebrew, Early Christian, plain-song, medieval, Renaissance, and Baroque music to the 1770s. Readings, listening, score study, and listening laboratory assignments are required. This course counts toward the Group 1 (humanities) requirement for the associate degree.

MU 236**History of Music 2 (3/3)**

Prerequisite: MU 235 – The study of the music in the Western World in the high Baroque, Classical, and Romantic eras. Readings, listening, score study and laboratory listening assignments are required. Introduction to music research and a research paper. This course counts toward the Group 1 (humanities) requirement for the associate degree.

MU 237**History of Music 3 (3/3)**

Prerequisite: MU 236 – The study of music in the contemporary era. Additional units tracing the history of music in America and women in music will also be included. Readings, listening, score study, and laboratory listening assignments are required. This course counts toward the Group 1 (humanities) for the associate degree.

MU 239**Chamber Music 1 (1/1)**

Small chamber music ensembles in woodwind, brass, voice, keyboard and percussion in both traditional and jazz modes. At least four and no more than sixteen members make up each ensemble. Students may take MU 239 and MU 240 concurrently. MU 239 and MU 240 may be taken twice each for credit.

MU 240**Chamber Music 2 (1/1)**

Small chamber music ensembles in woodwind, brass, voice, keyboard and percussion in both traditional and jazz modes. At least four and no more than sixteen members make up each ensemble. Students may take MU 239 and MU 240 concurrently. MU 239 and MU 240 may be taken twice each for credit.

MU 250**Cabaret Class and Tour (4/4)**

Students will be shown how to prepare musical cabaret material and will work on solo, duet, and group material. The class will consist of a ten-week preparatory section (rehearsal/classwork) followed by a six-week "performance" tour of area middle and high schools.

MU 254**Advanced Studio Techniques 1 (3/4)**

Prerequisite: MU 155. Advanced Studio Techniques 1 develops advanced recording skills utilizing multiple microphone techniques while simultaneously recording multiple instrumentalists. Capturing sound using multiple microphones also improves mixing console skills. The objective of this course is to provide the student with practical hands on experience via recording in stereo, medium sized music ensembles. As well, stereo music mixing skills will be broadened. Students will receive an hour private lecture/lesson each week that must be arranged with the instructor. This course requires a separate lab. Applied Music fee.

MU 255**Advanced Studio Techniques 2 (3/4)**

Prerequisite: MU 254, MU 102 – Advanced Studio Techniques 2 cultivates multi-track recording skills augmented with soundtrack “lock to picture” post-production.

Incorporating recording skills studied in pre-requisite semesters, “Radio, Television, and Corporate Industrial” production will be explored. Theories and practices pertaining to various “end-user” formats will be covered. As well, this course enables the student to summarize and incorporate skills and concepts established throughout the entire recording technology curriculum. The objective of this course is to merge various recording technology skills into a single craft. Students will be receive a one hour private lecture/lesson each week that must be arranged with the instructor. This course requires a separate lab. Applied Music fee.

MU 263**Introduction to Jazz Improvisation (1/1)**

Prerequisite: One year of music theory and equivalent; evidence of skill or potential in performance – Practicum in technique of jazz improvisation in jazz and other popular music styles and standard works. Emphasis is upon chord progression, melodies and phrase construction, and practice procedure in instrument or voice. This course requires a separate lab. Lab fee.

MU 283**Basic MIDI Sequencing (3/3)**

Prerequisite: MU 101, MU 155, and MU 171 – Basic MIDI Sequencing develops introductory skills in MIDI sequencing. The objective of this course is to familiarize the student with the fundamentals and applications of MIDI technology, including sequencing software, MIDI interfaces, sound modules, MIDI sync, as well as uses un-related to music. This course introduces MIDI technology to the Recording Technology student.

MU 284**Advanced MIDI Sequencing (3/3)**

Prerequisite: MU 283, MU 172, and MU 102 – Advanced MIDI Sequencing utilizes MIDI technology to develop musical arranging skills. Various categories of MIDI arranging will be covered including, pop, rock and classical as well as music production for radio and television. The objective of this course is to integrate musical and technical MIDI skills into the complete, artistic craft of recording technology. Incorporating digital audio with MIDI sequencing will examine file importing, exporting and exchange between the PC and Macintosh formats. This solidifies that MIDI technology is an integral part of music production and the recording studio control room.

MU 298**Independent Study in Music 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of music and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take MU 298. No student may earn more than two credits in independent study.

MU 299**Independent Study in Music 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of music and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take MU 298. No student may earn more than two credits in independent study.

OT – OCCUPATIONAL THERAPY ASSISTANT**OT 102****Introduction to Occupational Therapy (3/3)**

Introduction to the field of occupational therapy. Encompasses the roles of Registered Occupational Therapist and Certified Occupational Therapy Assistant, levels of education, philosophy, treatment and skills required for practice. The course includes lectures and observations of Occupational Therapy clinicians in treatment settings. Open to students interested in exploring the field of Occupational Therapy. Offered Fall semester only.

OT 104**Occupational Therapy Concepts and Terms (1/1)**

Prerequisite: Formal acceptance into the OTA program; **Co-requisites:** OT 102, OT 108, and BI 121 (may be taken concurrently) – Lecture course focusing on concepts and terminology specific to Occupational Therapy. Includes vocabulary, medical terminology, abbreviations and overview of concepts used in Occupational Therapy practice. Offered Fall semester only.

OT 108**Therapeutic Interventions 1 (3/5)**

Prerequisite: Formal acceptance into the OTA program; **Co-requisites:** OT 102, OT 104, and BI 121 – Introduction to disabling conditions, purposeful activities and treatment specific to the geriatric population. Planning, teaching, and analyzing activities. Examine the role of COTA as an Activity Director. Offered Fall semester only.

OT 109**Therapeutic Intervention 2 (3/5)**

Prerequisites: OT 102, OT 104, OT 108, and PY 201; **Co-requisites:** OT 110, BI 122, PY 231, GH 120, and CD 118 – Correlation between activities and occupational therapy treatment of children. Topics include self-care, adaptive communication, play-leisure activities, evaluation of developmental, gross and sensory motor area, use of mobility aids, splint fabrication and department management. Offered Winter semester only.

OT 110**Disabling Conditions (4/4)**

Prerequisites: OT 102, OT 104, OT 108, PY 201, and BI 121; **Co-requisites:** OT 109, BI 122, PY 231, and GH 120 – Identifying the definition, etiology, symptoms, systems affected, prognosis, precautions, medical treatment and occupational therapy treatment of selected disabling conditions. Specific occupational therapy techniques and activities emphasized. Offered Winter semester only.

OT 208**Therapeutic Interventions 3 (3/5)**

Prerequisites: OT 102, OT 104, OT 108, OT 109, and OT 110; **Co-requisites:** GH 120, OT 214, OT 220, and OT 224 – Correlation between activities and occupational therapy treatment of adolescent and adult population. Topics include assessment, treatment planning, activity analysis, group facilitation, service management, and adaptive equipment. Offered Fall semester only.

OT 214**Kinesiology in Occupational Therapy (3/3)**

Prerequisites: OT 102, OT 104, OT 108, OT 109, OT 110; **Co-requisites:** OT 208, OT 220, OT 224 – An investigation of movement, normal and abnormal extremity function, posture, gait, body mechanics. Study of structural anatomy. Assessment of range of motion of joints, muscle strength, posture, positioning, transfer techniques and applied kinesiology as related to Occupational Therapy. Offered Fall semester only.

OT 220**Fieldwork 1 (1/3)**

Prerequisites: OT 102, OT 104, OT 108, OT 109, OT 110, BI 121, BI 122, GH 120, CD 118, CD 120, and PE 156; **Co-requisites:** OT 208, OT 214, and OT 224 – An introductory Occupational Therapy field experience which exposes the student to the disabled client/patient. Consisting of observation, client interviews, activity analysis and limited participation in several settings of occupational therapy practice. Exposure to COTA/OTR role delineation in a community setting. Forty-five (45) hours of fieldwork observation as arranged. Offered Fall semester only.

OT 224**Fieldwork Seminar 1 (1/3)**

Prerequisites: OT 102, OT 104, OT 108, OT 109, OT 110, BI 121, BI 122, GH 120, CD 118, CD 120, and PE 156; **Co-requisites:** OT 208, OT 214, OT 224 – A seminar for guided exchange of information related to field experiences. Discussion of observations, ethics, treatment techniques, professional discipline and activity analysis. Offered Fall semester only.

OT 230**Fieldwork 2 (10/10)**

Prerequisites: OT 102, OT 104, OT 108, OT 109, OT 110, OT 208, OT 214, OT 220, OT 224, BI 121, BI 122, PY 201, PY 231, CD 118, CD 120, and GH 120; **Co-requisite:** OT 235 – Fieldwork experience in treatment settings supervised by an OTR or COTA. Application of acquired knowledge of Occupational Therapy. Perform duties and treatment identified in the performance objectives at each treatment setting. Fieldwork consists of 16 weeks of full-time experience and must be completed within 20 months of the completion of didactic coursework. Offered Winter semester only.

OT 235**Fieldwork Seminar 2 (2/2)**

Prerequisites: OT 102, OT 104, OT 108, OT 109, OT 110, OT 208, OT 214, OT 220, and OT 224; **Co-requisite:** OT 230 – A seminar for guided exchange of information related to field experience. Focus on professional writing, quality assurance, reimbursement, scope of practice, occupational therapy techniques, job-seeking skills and exposure to professional organizations. Offered Fall semester only.

OT 298**Independent Study in Occupational Therapy 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of occupational therapy and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take OT 298. No student may earn more than two credits in independent study.

OT 299**Independent Study in Occupational Therapy 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of occupational therapy and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take OT 298. No student may earn more than two credits in independent study.

PC – PHYSICAL SCIENCE

The physical science sequence is designed for the non-science majors who need a natural science laboratory course to complete their curriculum or transfer requirements. Courses may be taken in any order since there are no prerequisites. Content of each is descriptive in nature. Basic mathematical skill is sufficient.

PC 101**General Physical Science (4/6)**

A survey course for non-science majors looking for a hands-on, minds-on science course. This is a good course for students pursuing careers in elementary education, criminal justice, and anyone interested in increasing basic scientific literacy. This course takes the concepts of matter, energy and the conservation laws as fundamental. Topics include the states of matter, physical, chemical and nuclear changes, the periodic table and bonding, measurement, electricity, magnetism, heat and light. Lecture topics and laboratory experiences are linked to give students the opportunity to use their scientific knowledge in the development of critical thinking skills. Emphasis is placed on understanding science using real world contexts, the verbalization of scientific concepts, and the role of evidence in scientific understanding. Six hours lecture/lab.

PC 111**Physics of Everyday Life (4/6)**

The study of physics as it relates to everyday life. Topics will include motion, forces, water, heat, sound, electricity, magnetism and light. The course requires a minimal amount of mathematics, just basic operations of addition, subtraction, multiplication and division. The course is designed primarily for non-science majors.

PC 141**Science of Sound (4/6)**

A survey of the physics of sound, including the nature of sound, the relation between perceived quantities (pitch and loudness), measurable quantities, musical scales, room acoustics, the production of musical sounds, and the electronic recording and manipulation of sound. Three hours lecture/three hours lab.

PC 151**The Science of Light, Optics, and Vision (4/6)**

The study of the nature, behavior and measurement of light. The course topics will include lenses and mirrors, vision and perception, color, and wave properties of light. The course has particular application for students in photography and is of special interest for students in art and other studies where knowledge of light and color are used. The course requires a minimum amount of mathematics such as addition, subtraction, multiplication and division, though scientific notation is also discussed and used. Four hours lecture, two hours lab.

PC 298**Independent Study in Physical Science 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of physical science and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take PC 298. No student may earn more than two credits in independent study.

PC 299**Independent Study Physical Science 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of physical science and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take PC 298. No student may earn more than two credits in independent study.

PE – PHYSICAL EDUCATION**PE 180****Football Theory (2/3)**

Methods, techniques, and philosophy of offensive and defensive football for the future football coach. Lab and lecture. Offered Fall and Winter semesters.

PE 181**Baseball Theory (2/3)**

A professional course designed for the prospective coach with special emphasis on how to teach the game. Lecture and lab. Offered Fall and Winter semesters.

PE 182**Basketball Theory (2/3)**

A professional course designed for the prospective coach with special emphasis on how to teach the game. Lecture and lab. Offered Fall and Winter semesters.

PE 183**Track Theory (2/3)**

Preparation of prospective track coaches in techniques and methods of track and field athletics. The theory of track is a physical education major course designed for teaching and coaching track and field events. Lecture and lab. Offered Fall and Winter semesters.

PE 184**Principles of Physical Education (3/3)**

Nature of health, physical education from ancient to modern times; biological, psychological, and sociological foundations of physical education; physical and mental fitness, professional organizations, literature, and career opportunities. On one of the days we will be going to elementary schools to get some hands-on teaching experience. Students are required to provide their own transportation to and from the elementary schools. Lecture and lab. Offered Fall and Winter semesters.

PE 185**Sports Officiating (2/3)**

Rules of the major sports, game administration, officiating techniques, and relationships with players and school officials. Students interested in officiating are encouraged to register with the state association. Lab and lecture. Offered Fall semester.

PE 186**Community Recreation (3/3)**

Nature, extent, and significance of community recreation, planning of recreation programs, services, areas, and facilities; effective leadership; organization and administration of the municipal recreation department; and a survey of recreation resource material. Offered Winter and Summer semesters.

PE 195**Water Safety Instruction (2/3)**

Prerequisite: PE 144 or PE 145 or equivalent – Instructional preparation for teaching of community water safety and life saving skills associated with aquatic activities. Upon completion of this course, the student will be certified by the American Red Cross as a Water Safety Instructor and CPR for the Professional Rescuer. Offered Winter and Summer semesters.

PE 198**Introduction to Athletic Training (3/3)**

The field of athletic training, the general principles of athletic training, relationship with players and coaches, prevention and management of sport-related injuries. Students interested in athletic training are encouraged to enroll at a school of higher learning to pursue a career in this field. Offered Fall and Winter semesters.

PE 298**Independent Study in Physical Education 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of physical education and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take PE 298. No student may earn more than two credits in independent study. Offered all semesters.

PE 299**Independent Study in Physical Education 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of physical education and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take PE 298. No student may earn more than two credits in independent study. Offered all semesters.

PH – PHYSICS**PH 115****Technical Physics (4/6)**

Prerequisite: TE 103, MA 104, or high school algebra – A survey of the fundamental principles of physics, including topics in mechanics, heat, sound, light, and other physical properties of matter. Emphasis will be placed on technical applications rather than the theoretical origins of the laws of physics. Four hours lecture, two hours lab.

PH 118**Physics for Chemical Technicians (4/6)**

Prerequisite: MA 131 – A survey of fundamental principles of physics with an emphasis on optics, waves, and electricity. Six hours lecture/lab.

PH 125**College Physics 1 (4/7)**

Prerequisites: MA 108 or high school trigonometry – A basic non-calculus course in general physics for non-physical science majors. Includes the study of motion and energy from the point of view of forces and conservation principles. Four hours lecture, three hours lab.

PH 126**College Physics 2 (4/7)**

Prerequisite: PH 125 – A basic non-calculus course in general physics for non-physical science majors. Includes the study of waves, electricity, magnetism, optics, relativity, quantum mechanics, and nuclear physics. Four hours lecture, three hours lab.

PH 245**Calculus Physics 1 (5/8)**

Prerequisites: MA 133, high school physics or equivalent, and MA 134 (can be taken concurrently) – Classical mechanics, heat and wave motion; for engineering and physics majors. Appropriate for any physical science major. Three hours lecture, three hours lab, and two hours discussion.

PH 246**Calculus Physics 2 (5/8)**

Prerequisite: PH 245 – Electricity, magnetism, and optics; introduction to electromagnetic radiation and selected topics in modern physics. Three hours lecture, three hours lab, and two hours discussion.

PH 298**Independent Study in Physics 1 (1/1)**

Prerequisite: Sophomore standing – Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of physics and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take PH 298. No student may earn more than two credits in independent study.

PH 299**Independent Study in Physics 2 (1/1)**

Prerequisite: Sophomore standing – Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of physics and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take PH 298. No student may earn more than two credits in independent study.

PL – PHILOSOPHY**PL 201****Introduction to Philosophy (3/3)**

A consideration of some basic problems of philosophy, philosophic and scientific knowledge, mind and body, the nature of man and self-identity, values in human conduct from the point of view of historical and contemporary positions or “schools” of philosophy.

PL 202**Introduction to Logic (3/3)**

A practical study of good and bad human reasoning. Includes a study of the traditional fallacies plus various aspects of deductive and inductive reasoning. Open to freshmen who have completed EN 101.

PL 205**Introduction to Ethics (3/3)**

An introduction to the study of ethics, focusing on the application of ethical theories to classic as well as contemporary moral problems, and to personal as well as social issues. Classes consist of lectures and explanations of textual materials along with a good deal of discussion.

PL 206**Biomedical Ethics (3/3)**

This course will help the student to establish a moral framework for determining the moral obligations of health care related professionals in the wake of recent scientific, technological and social developments. The student will also have the opportunity to discuss the fundamental issues in current medical ethics, and write about the basic moral and social issues confronting the medical profession today.

PL 207**Moral Choices in Contemporary Society (3/3)**

This course examines controversial moral dilemmas in such issues as abortion, sexual conduct, crime and punishment, business and political ethics, science, technology, work and race, the proverbial problems of how we live our lives. Students read opposing sides of issues in the textbook and explore one issue in depth through outside reading of books or articles. Attend scheduled discussion sessions and prepare a final examination. Formal classroom instruction on campus takes place weekly, at which time discussion and review will augment the readings.

PL 209**Business Ethics (3/3)**

Students will examine ethical aspects of business norms and practices. Students will address issues and questions concentrating on how moral standards apply particularly to business, institutions, and behavior.

PL 298**Independent Study
in Philosophy 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of philosophy and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take PL 298. No student may earn more than two credits in independent study.

PL 299**Independent Study
in Philosophy 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of philosophy and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take PL 298. No student may earn more than two credits in independent study.

PN – PRACTICAL NURSING**PN 115****Introduction to
Practical Nursing (3/3)**

Prerequisite: Formal acceptance into the program – Role expectations of the student and graduate practical nurse are identified. Historical perspectives and contemporary issues are discussed. Principles of teaching and learning are described and applied to basic competencies in mathematics and health care terminology. Effective communication skills within helping relationships are described, modeled and practiced. Common human responses to illness, injury and crisis are identified, and caring approaches are discussed. Offered Fall and Winter semesters.

PN 117**Health and Wellness (4/4)**

Prerequisite: formal acceptance into the program; **Co-requisite:** PN115 – Physical, social, emotional and developmental concepts that influence health and wellness across the life-span are discussed. Safety concerns basic to health care are emphasized. Foundations of nutrition and medication administration are presented. Coping methods and related community health resources are explored. Offered Fall and Winter semesters.

PN 119**Direct Care 1 (8/10.25)**

Prerequisites: PN 115, PN 117, PE 156, GH 125, and GH 126 (may be taken concurrently) – The nursing process is presented as the basis for nursing care. Assessment of adults is introduced. Simulated and clinical experiences focus on care of individuals requiring assistance with basic health needs. Offered Winter and Summer semesters.

PN 132**Direct Care 2 (7/10.5)**

Prerequisites: PN119, GH125, and GH126 – The nursing process is used to promote self-care of persons with simple health needs. Explores problems of supportive-educative and partly compensatory persons. Students learn the importance of interpersonal relationships for patients with simple health needs in structured health care and community settings. Offered Fall and Summer semesters.

PN 135**Family Nursing (7/10.5)**

Prerequisite: PN 115, PN 117, PN 119 and PN 132 – This course includes the promotion of self-care for persons during the reproductive cycle. It is also concerned with the growth and development of the child from conception through adolescence and includes the care of children experiencing acute and chronic illnesses. It incorporates concepts of interpersonal relationships while promoting family-centered care. Offered all semesters.

PN 141**Direct Care 3 (7/10.5)**

Prerequisite: PN 135 – The student will provide and assist with direct nursing care of persons with complex health needs that may be chronic and involve major lifestyle changes. Components of the nursing process will be utilized in structured health care and community settings. Offered all semesters.

PN 143**Role Adjustment (5/7.75)**

Prerequisite: PN 141 – The student explores the role of the Practical Nurse in various health settings. Focus is on the care of groups of patients and collaboration with health team members. Offered Fall and Summer semesters.

PO – PHOTOGRAPHY**PO 103****Introduction to Photography 1 (3/4)**

Introduction to photography as a science, a tool, and an art form. Mechanical as well as creative controls on the camera will be discussed in detail, and the student will gain a basic understanding of the mechanical and creative use of a photographic black and white darkroom. Student must own or have use of a 35mm, fully adjustable SLR camera. Four hours lecture/lab combination.

PO 104**Introduction To Photography 2 (3/4)**

Prerequisite: PO 103 – Continuation of PO 103, with further investigation into advanced exposure and the Zone System method. Students learn the production of the “fine photographic print.” Archival processing, both film and paper, filtration control both in camera and in the darkroom. Four hours lecture/lab combination.

PO 105**History of Photography as Art (3/3)**

Photography's contribution to the visual arts since 1839 is examined in some detail. The lives and works of the photographers who have advanced photography as an art form are studied in relation to the artistic significance of the medium today.

PO 110**Advanced Black and White
Darkroom (3/4)**

Prerequisite: PO 103 or 104 – Technical skills needed by the advanced black and white darkroom technician are developed. Characteristic curves, test negatives and prints, developmental processes, and enlarging methods are studied. Several “experimental” photographic techniques will be tried that should give the student a broader creative base to choose from.

PO 210**Introduction to Color Printing (3/4)**

Prerequisite: PO 110 – A study of color theory and printing of color prints from slides onto “filochrome” color print material using standard CP filters and dichromic color filtration.

PO 220**View Camera: Large Format Photography (3/4)**

Prerequisite: PO 110 – Introduction and practice in the use and operation of the 4 x 5 view camera; equipment, lenses, swings and tilts, perspective control and correction, printing and processing of large format negatives with auto-processing equipment. Four hours lecture/lab combination.

PO 230**Photo Retouching Print Finishing (3/4)**

Prerequisite: PO 110 – Introduction to computerized retouching and print manipulation using Apple Macintosh computers and Adobe Photoshop as applied to the photographic product. Four hours lecture/computer lab combination. No darkroom privileges with this class.

PO 240**Portrait Studio Techniques (3/4)**

Prerequisite: PO 220 – Specialized instruction in photography under controlled lighting conditions; introduction to the technical application of lighting as it applies to illustrative, product, and industrial photography. Different lighting techniques for special photographic subjects are studied. Four hours lecture/lab combination.

PO 241**Photo Journalism (3/4)**

Prerequisite: PO 110 – Techniques of event photography, capturing the “key moment,” developing the photo essay, laying out the page, and creating the interpretative photo story. Students should have basic computer skills. NO PHOTOGRAPHIC DARKROOM PRIVILEGES WITH THIS CLASS. THIS CLASS IS NOT PART OF THE PHOTOGRAPHY CURRICULUM.

PO 250**Illustrative Studio Techniques (3/3)**

Prerequisite: PO 210 – Classical as well as contemporary photographic portraiture including male, female, couples, brides, children and group portraiture.

PO 252**Introduction to Television Production (3/4)**

Students will acquire basic skills of television field production and post production with an emphasis on commercial/corporate communications. Camera, sound and lighting techniques are covered. Editing techniques are practiced in a digital environment. NO PHOTOGRAPHIC DARKROOM PRIVILEGES WITH THIS CLASS. THIS CLASS IS NOT PART OF THE PHOTOGRAPHY PROGRAM CURRICULUM.

PO 298**Independent Study in Photography 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of photography and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director and the appropriate Dean before they register for this course. Students electing independent study for the first time should take PO 298. No student may earn more than two credits in independent study.

PO 299**Independent Study in Photography 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of photography and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take PO 298. No student may earn more than two credits in independent study.

PS – POLITICAL SCIENCE

Students must complete Political Science 110 to satisfy Grand Rapids Community College graduation requirements.

PS 110**Survey of American Government (3/3)**

Survey of American national government. Emphasis is placed on understanding and appreciation of the democratic process. Designed to satisfy the state educational requirement in political science, this course will satisfy statutory and college graduation requirements. Students may not receive credit for both PS 101 and PS 110.

PS 200**State and Local Politics (3/3)**

The organizations and functions of state, county and local government will be examined. Emphasis will be placed on the government of Michigan and Kent County and the relationship of the individual to current trends in government. Students may not receive credit for PS 102 and PS 200.

PS 201**Comparative Governments (3/3)**

This course will examine government and domestic politics as it exists in other countries around the world. It will use states in Europe, Asia, Africa, and the Americas as case studies. Students will examine political, cultural, economic, and historical reasons for similarities and differences between countries. The United States will be useful as a point of reference. In the process students will discover alternative ways of dealing with familiar problems, and a greater understanding of the differences around our world.

PS 202**International Relations (3/3)**

Prerequisite: PS 110 – An introductory survey of the basic concepts, issues, and methods characterizing this interdependent world in which we live. It provides students a depth of understanding of foreign policy objectives, international actors' interactions, and trends in the international system.

PS 215**The Survey of Asian Politics (4/4)**

The political, economic, and cultural structures of major Southeast Asian countries such as China, Japan, and South Korea will be discussed with an emphasis on their governments, public policy-making process, and policy areas. This introductory course will enable students to get a handle on the subject and get prepared for future career and intellectual development. Countries or regions under consideration can be arranged to meet specific demand.

PS 245**Great Decisions (2/2)**

A foreign policy course featuring eight different guest speakers of national and international expertise on current global issues. The Great Decisions lecture series is sponsored by the Educational Partners of the World Affairs Council of Western Michigan. Focus of both lecture series and course is to develop greater knowledge of U.S. foreign policy, using as case studies the eight topics selected each year by the Foreign Policy Association.

PS 298**Independent Study in Political Science 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of political science. Must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take PS 298. No student may earn more than 2 credits in independent study.

PS 299**Independent Study in Political Science 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of political science. Must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take PS 298. No student may earn more than 2 credits in independent study.

PY – PSYCHOLOGY**PY 101****Learning to Adjust to College (3/3)**

Assists the student in coping with the college environment and in becoming a more effective learner. Both life and learning skills are covered.

PY 106**Managing Personal Stress (2/2)**

An experiential study of causes of stress, physiological and psychological responses, and methods used to manage personal stress. Emphasis will be placed on the emerging field of behavioral or holistic medicine. Students participate in stress management techniques such as relaxation, meditation, hypnosis, biofeedback, and physical exercise.

PY 201**General Psychology (3/3)**

An introductory course in which the many areas of the discipline are explored. These include theoretical perspectives, research methods, human growth and development, cognition, personality, individual differences and abnormal behavior.

PY 203**Applied Psychology: Human Adjustment (3/3)**

Prerequisite: PY 201 – The application of psychological principles to everyday life in the family, school, business and industry, and the community; emphasis is on personal adjustment and mental health.

PY 231**Abnormal Psychology (3/3)**

The study of the etiology, symptoms and treatment of abnormal behavior as identified by the DSM-4. This course emphasizes gender, cultural and contextual influences on behavior.

PY 232**Developmental Psychology (3/3)**

Prerequisite: PY 201 – The study of the physical, cognitive and social development of the individual from conception to death, with major emphasis upon behavioral characteristics and psychological factors. Credit will not be granted for both PY 232, CD 118 or CD 120.

PY 233**Child Psychology (3/3)**

Prerequisite: PY 201 – The course is designed for parents, teachers, nurses, social workers, clergy, and others interested in exploring the growth of children. The course examines physical, cognitive, and socio-emotional development from infancy (including prenatal development) through adolescence.

PY 234**Adolescent Psychology (3/3)**

Prerequisite: PY 201 – Continuation of child psychology, with emphasis on the period of adolescence and the problems of personal and social adjustment.

PY 251**Education Psychology (3/3)**

Prerequisite: PY 201 – This class is intended to be a part of your professional preparation for teaching in the field of education. You will be challenged to think about what it takes to become a great teacher. Good teaching is not confined to the classroom environment, therefore, students will have an opportunity early in their education major to do a volunteer experience in an education setting.

PY 281**Introduction to Statistics (4/4)**

Prerequisites: PY 201 and MA 110 or equivalent, or permission of instructor – Descriptive techniques in gathering data. Measures of central tendency. Measure of dispersing with particular emphasis on the z-scores and applications to curve of probability. Tests of significance using t-test and chi-square. Sampling techniques of sample difference.

PY 298**Independent Study in Psychology 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of psychology and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take PY 298. No student may earn more than two credits in independent study.

PY 299**Independent Study
in Psychology 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of psychology and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take PY 298. No student may earn more than two credits in independent study.

RD – READING**RD 097****Introduction to
College Reading (4/4)**

The primary focus of this developmental reading class is vocabulary building and the reading process. With improvement in vocabulary, students can also expect to improve their comprehension. Students review, refresh, and reinforce skills that may have become less efficient through a lack of application. A structured reading and writing project is designed to improve reading skills. Includes pre and post testing and guided laboratory practice.

RD 098**College Reading (4/4)**

This is a developmental reading class which provides students the necessary time to review, refresh, and extend skills that may have become less efficient through a lack of application. The emphasis is on comprehension skills and introduction to critical reading. To facilitate this development, a computer-assisted program must be completed. A themed reading and writing project and testing are also included.

RD 298**Independent Study
in Reading 1 (1/1)**

An independent computer-based study in reading skills performed under the guidance of a faculty member. Students must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take RD 298. No student may earn more than two credits in independent study.

RD 299**Independent Study
in Reading 2 (1/1)**

An independent computer-based study in reading skills performed under the guidance of a faculty member. Students must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take RD 298. No student may earn more than two credits in independent study.

**RT – RADIOLOGIC
TECHNOLOGY****RT 100****Orientation to Health Care (2/2)**

Acquaints students with comprehensive health care of patients in radiology departments. Topics include patient communication, medical and surgical asepsis, body mechanics, vital signs, medical emergencies, drug administration, isolation techniques, and control of communicable diseases. Two hours lecture plus 20 hours of clinical orientation during the preceding summer.

RT 110**Radiographic Positioning 1 (4/5)**

Prerequisite: Formal acceptance into the Associate Degree Program – Introduces beginning positioning. Permits the student to simulate positioning upon peers and to demonstrate radiographic positioning upon a phantom man. Student will operate radiographic equipment. Topics include radiographic examination and study of the structure of the body with topographic anatomy to include nomenclature of the upper and lower extremities, abdominal viscera and chest. Lab exercises include radiographic positioning of the phantom man and peer simulation.

RT 111**Radiographic Exposure 1 (3/5)**

Study of basic radiographic imaging and techniques. Topics include but not limited to creating the beam and image with emphasis in radiation concepts, radiation protection, electricity, operation of radiographic generator and X-ray equipment, X-ray tube, X-ray production, prime factors, beam restriction and the grid. Lab experiences includes experimentation.

RT 112**Radiographic Positioning 2 (4/5)**

Prerequisite: RT 110 – Continuation of Radiologic Technology 110. Topics include positioning of routine, radiologic examinations of the shoulder girdle, bony thorax, pelvic girdle, vertebral column, and special views of the knees. Consideration is given to topographic anatomical landmarks, demonstration of positions, radiographing the injured patient, long bone measurements, and scoliosis series. Lab exercises include radiographic positioning of the phantom and peer simulation.

RT 113**Radiographic Exposure 2 (3/5)**

Prerequisite: RT 111 – Continuation of Radiographic Exposure 111. Continues development of topics analyzing the image, comparing exposure systems and special imaging systems. Topics include but are not limited to principles of radiography including detail and distortion, prime factors, digital radiography, radiographic film and processing, sensitometry, intensifying screens, quality control procedures, phototiming, and exposure conversion problems. Lab experience aids the student in formulating technical factors for optimal imaging.

RT 130**Clinical Practicum in Radiologic
Technology 1 (3/3)**

Prerequisites: RT 110 and RT 111 – Provides students with hospital clinical experience, permitting them to apply radiographic theory in all phases of radiologic technology. Specific objectives are listed in the Student Handbook. Formal and informal discussion groups meet weekly at each affiliating clinical facility. Sixteen (16) hours a week.

RT 131**Clinical Practicum in Radiologic
Technology 2 (4/4)**

Prerequisites: RT 112, RT 113, and RT 130 – Provides students with hospital clinical experience, permitting them to apply radiographic theory in all phases of radiologic technology. Specific objectives are listed in the Student Handbook. Formal and informal discussion groups held weekly at each affiliating clinical facility. Forty hours (40) a week for eight weeks during the summer.

RT 207**Radiation Protection (2/2)**

Acquaints students with the effects of ionizing radiation on human tissue; includes methods of detecting radiation, determination of dosages, the physical interaction of radiation with matter, and an introduction to radioactive isotopes. Radiation safety and protection are stressed throughout.

RT 210**Radiographic Positioning 3 (4/5)**

Prerequisite: RT 112 – Study of radiographic examination of pediatric radiography and skull. Includes portable positioning of the human skull at any age with special projections using modified positioning techniques. Special emphasis is given to skull anatomy and radiographic technique. Lab exercises include radiographic positioning of the phantom man and peer simulation.

RT 211**Survey of Medical-Surgical Diseases (2/2)**

Provides an understanding of basic principles of pathology and awareness of radiographic appearance of specific diseases of body systems on the radiograph.

RT 212**Radiographic Positioning 4 (4/5)**

Prerequisite: RT 210 – Places primary emphasis on special procedures including angiographic studies and principles of cardiac catheterization and emphasis of different types of contrast agents, using specialized radiographic equipment. Lab experiments are provided to aid the student in writing a research paper.

RT 213**Radiologic Leadership Skills (2/2)**

Acquaints student with leadership and employability skills, with emphasis on verbal and nonverbal communications.

RT 215**Physics of X-ray (4/6)**

A study of the physical principles underlying generation of ionizing radiation. Topics include electrical and physical concepts and their application to production and operation of X-ray circuits, transformers, rectifiers and tubes.

RT 230**Clinical Practicum in Radiologic Technology 3 (3/3)**

Prerequisites: RT 131 and RT 210 (may be taken concurrently) – Provides students with hospital clinical experience, permitting them to apply radiographic theory in all phases of radiologic technology. Formal and informal discussion groups held weekly at each affiliating clinical facility. Twenty-four (24) hours a week.

RT 231**Clinical Practicum in Radiologic Technology 4 (3/3)**

Prerequisites: RT 131 and RT 210 (may be taken concurrently) – Provides the student with hospital clinical experience; permits students to apply radiographic theory in all phases of radiologic technology. Specific objectives are listed in the Student Handbook. Formal and informal discussion groups are held weekly at each affiliating clinical facility. Twenty-four (24) hours a week.

RT 232**Clinical Practicum in Radiologic Technology 5 (4/4)**

Prerequisites: RT 131 and RT 210 (may be taken concurrently) – Provides students with hospital clinical experience, permitting them to apply radiographic theory in all phases of radiologic technology. Specific objectives are listed in the Student Handbook. Formal and informal discussion groups are held weekly at each affiliating clinical facility. Forty (40) hour week/10 weeks summer.

RT 298**Independent Study in Radiologic Technology 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of Radiologic Technology and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director and the appropriate Dean before they register for this course. Students electing independent study for the first time should take RT 298. No student may earn more than two credits in independent study.

RT 299**Independent Study in Radiologic Technology 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of Radiologic Technology and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director and the appropriate Dean before they register for this course. Students electing independent study for the first time should take RT 298. No student may earn more than two credits in independent study.

SC – SPEECH**SC 131****Fundamentals of Public Speaking (3/3)**

Developing, organizing, and delivering formal and informal presentations to a small audience. The student prepares speech outlines and presents five or six speeches of varying lengths. Counts as credit toward fulfilling Group 1 (humanities) requirements for associate degree.

SC 135**Interpersonal Communication (3/3)**

Study and practice of effective techniques, both verbal and nonverbal, for relationship building. Student participation emphasizes small group and dyad experiences related to the study of growth-promoting interaction. Requires active student participation, reading, and writing journals and papers. Counts as credit toward fulfilling Group 1 (humanities) requirements for associate degree.

SC 171**American Sign Language 1 (3/3)**

This course is an introduction to American Sign Language, the language that is used by deaf adults in the United States. Students in this course will learn the manual alphabet used in finger spelling, 400 to 500 signs used in ASL, rules on grammar and syntax used in ASL, and an introduction to deaf culture and techniques to use in communicating with a deaf person. Current issues in deaf education and deafness will also be discussed.

SC 172**American Sign Language 2 (3/3)**

Prerequisite: SC 171 – This course continues to build on the skills that were started in SC 171 American Sign Language 1. In this course, students will learn more about the deaf culture and deafness as well as add 300 to 500 signs to their vocabulary.

SC 227**Argumentation and Debate (3/3)**

A basic course in the fundamentals of argument. Focus is on logical reasoning and avoiding fallacies. Practice in public speaking may be included.

SC 228**Intercollegiate Debate (1/1)**

This course gives students the opportunity to study the national debate topic and present, through formal, structured debate, their arguments and evidence.

SC 232**Introduction to Persuasive Speaking (3/3)**

Prerequisite: SC 131 or permission of instructor – An advanced course in public speaking designed to develop an understanding of the fundamentals of the use of persuasive communication with logical and emotional appeals.

SC 235**Sex, Gender, and Communication (3/3)**

This course emphasizes an awareness of, sensitivity to, and competence in communications across gender lines. Theories that are studied focus on romantic, friendship, family, and co-worker relationships.

SC 240**Family Communications (3/3)**

This course is a focused study of family communication. Emphasis will be placed on a study of the family as a social system. Of key concern will be family structure, function, dynamics, power, and interactions patterns as represented through the communication of family members.

SC 241**Performance Studies (3/3)**

This course is designed to enable the student to choose, analyze, and perform the texts of humankind. Texts range from traditional prose, poetry, and drama to rituals, ceremonies, oral histories, and personal narratives. It is a way of looking at human behavior from a point of view that emphasizes actions that can be created. SC 241 and TH 240 are the same course; therefore, credit cannot be granted for both courses.

SC 298**Independent Study in Communication 1 (1/1)**

Readings, research or independent study performed under guidance of a faculty member. Students may propose projects in any area of communication and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director and the appropriate Dean before they register for this course. Students electing independent study for the first time should elect SC 298. No student may earn more than two credits in independent study.

SC 299**Independent Study in Communication 2 (1/1)**

Readings, research or independent study performed under guidance of a faculty member. Students may propose projects in any area of communication and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director and the appropriate Dean before they register for this course. Students electing independent study for the first time should elect SC 298. No student may earn more than two credits in independent study.

SO – SOCIOLOGY**SO 205****Social Work (3/3)**

Provides the historical development of social welfare as an institution and that of social work as a profession and a career. Overview of professional values, knowledge and skills. The roles of government (federal, state and local) and other major institutions as they impact social welfare, social policy, social services and social work practice are considered.

SO 251**Principles of Sociology (3/3)**

Principles of society with reference to culture, population, social stratification, institutions, socialization of the child, group dynamics, personality, social change, gender and behavior, social roles and communities; rational interpretation of man and the culture in which he/she lives.

SO 254**Social Problems (3/3)**

This is an analysis of such major social problems as family and generation problems, divorce, youth contra-culture, the status of women, crime and delinquency, racial, ethnic and religious prejudice, environmental crisis, population, and urban and rural problems.

SO 260**Race and Ethnicity (3/3)**

Students will apply historical, sociological, medical and economic theories to issues of multiculturalism in the United States. Though the principal focus of the course will examine national issues of race, ethnicity, gender and social class, such issues will be placed within the context of the developing global economy.

SO 261**Growing Old in a New Age (3/3)**

America is growing older. This new course explores issues vital to this growing segment of our population with its myths and realities; love, intimacy and sexuality in later years; social roles and relationships; work, retirement and economics; how the body changes in the aging process; and surviving growing older in contemporary America.

SO 262**Aging in American Society (3/3)**

Analysis and description of the developing field of gerontology. Consists of in-depth study of needs of the elderly such as legal information, social security, tax relief, health, home and personal safety, nutrition and food purchasing, political power, mobilizing grass roots support groups, resources in the community for senior citizens, consumerism, and transportation. Discussion of the institutional interrelations that affect the elderly; analysis of changes needed in American society to aid senior citizens.

SO 263**Death and Dying (3/3)**

Illness and death can occur during all life stages. We need to be prepared. This class will cover historical perspectives, define death, attitudes toward death, dying process, grief and loss, etc. Students may not receive credit for both SO 263 and GO 263.

SO 265**Crime in Society (3/3)**

Prerequisite: SO 251 and 15 credit hours – Students will examine theoretical perspectives and explanations of crime which provide the foundation for studying both crime and the criminal justice system. Students will also focus on scientific methodology; measuring quantity, location and other features of crime.

SO 270**American Families in Transition (3/3)**

An overall view of the changing American family from a variety of perspectives and disciplines including contemporary as well as sociology, psychology, economic, political and historical. Some of the issues discussed will include working mothers (this becoming the norm), escalating divorce rates, declining birth rates, changing economic and social conditions and their impact/effect on the family.

SO 295**Comparative Sociology (3/3)**

Analysis of basic social characteristics of European cultures, emphasizing study of modern societies through travel and observation.

SO 298**Independent Study in Sociology 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of sociology and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate dean before they register for this course. Students electing independent study for the first time should take SO 298. No student may earn more than two credits in independent study.

SO 299**Independent Study in Sociology 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of sociology and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate dean before they register for this course. Students electing independent study for the first time should take SO 298. No student may earn more than two credits in independent study.

SP – SPANISH**SP 101****Introductory Spanish 1 (4/4)**

Introduction to Spanish. Spanish 101 introduces the pronunciation, vocabulary and basic grammar of Spanish. In addition, the course treats the culture and geography of Spanish-speaking countries. Listening comprehension and speaking are also emphasized with the aid of the International Language Laboratory.

SP 102**Introductory Spanish 2 (4/4)**

Prerequisite: SP 101 or equivalent – A continuation of the study of Spanish begun in Spanish 101 or its equivalent. Spanish 102 focuses on the tenses, grammar and structure of the Spanish language, increases vocabulary and provides opportunity for the student to increase speaking and comprehension skills, as well as composition ability. Increased use of the International Language Laboratory.

SP 122**Spanish for Criminal Justice (3/3)**

A practical course designed for Criminal Justice students stressing vocabulary, basic sentence structure and conversational drills. This course will teach students to participate in everyday conversations with Spanish speakers, while at the same time guiding them through various Criminal Justice related activities. This course will also cover various aspects of the Hispanic culture. (Course is appropriate for Law Enforcement, Public Safety, Correction, Parole, Firefighters, and Court officers and students)

SP 141**Spanish for Health Care (3/3)**

A practical course for non-Spanish speaking health care students stressing vocabulary, basic sentence structure and conversational drills. This course will teach the students to participate in everyday conversations with Spanish speakers while at the same time guiding them through the assessment and treatment process in health care. This course will also cover various aspects of the Hispanic culture. This course is not designed to transfer as a Spanish course within GRCC or outside the institution.

SP 231**Intermediate Spanish 1 (4/4)**

Prerequisite: SP 102 or equivalent – A global review of the structure of the Spanish language and culture, emphasizing reading skills, listening proficiency, improved speaking proficiency and accurate writing ability. The language is studied using modern short stories as a point of departure. Students use software for review of grammar in the International Language Laboratory.

SP 232**Intermediate Spanish 2 (4/4)**

Continued global review of Spanish language and culture. Extensive vocabulary growth and increased comprehension of spoken Spanish. Greater proficiency in conversing about short stories and personal experiences, as well as in expression of personal opinions and ideas. International Language Laboratory is used for study of literary selections and review of grammar topics.

SP 298**Independent Study in Spanish 1 (1/1)**

Prerequisite: Sophomore standing – Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of Spanish and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director and the appropriate Dean before they register for this course. Students electing Independent Study for the first time should take SP 298. No student may earn more than two credits in Independent Study.

SP 299**Independent Study in Spanish 2 (1/1)**

Prerequisite: Sophomore standing – Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of Spanish and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director and the appropriate Dean before they register for this course. Students electing Independent Study for the first time should take SP 298. No student may earn more than two credits in Independent Study.

SS – SOCIAL SCIENCE**SS 120****Introduction to Study of the Future (3/3)**

Students develop a vision of the future and desirable and meaningful roles therein. Study a variety of trends and their impact on the future. Gain confidence and skill to approach problems positively. The future is presented as exciting, interesting, and changeable. Participants learn to pursue futuristic techniques such as forecasts, simulations, and electronic communications. Some sessions meet in a computer lab for electronic communications work. Other laboratories may be used as appropriate.

SS 298**Independent Study
in Social Science 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of social science and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, the appropriate dean before they register for this course. Students electing independent study for the first time should take SO 298. No student may earn more than two credits in independent study.

SS 299**Independent Study
in Social Science 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of social science and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, the appropriate dean before they register for this course. Students electing independent study for the first time should take SS 298. No student may earn more than two credits in independent study.

SW – SOCIAL WORK**SW 102****Introduction To Social Welfare (4/4)**

Prerequisite: SO 205, PS 110 or permission of the Instructor – Provides historical development of social welfare in the Old and New worlds. Overview of Social Work, Social Welfare and role of the Social Workers. Description of the establishment of Social Welfare and Social Service Programs existing in the United States. Discussion of values underlying the existing systems.

SW 103**Social Work Interviewing and
Assessment (4/4)**

Prerequisite: SO 205, SW 102 or permission of the Instructor – Introduction to types, purposes and stages of interviewing. Basic empathy training. Skill development for observation, listening, non-verbal communication, rapport-building, information giving and information gathering. Beginning assessment, monitoring and working with culturally diverse, oppressed, or psychologically maladaptive clients.

TE – TECHNOLOGY

Other courses related to Technology:

AP - Apprenticeship
AR - Architecture
DR - Drafting
EL - Electricity and Electronics
ER - Energy Management and Construction
MN - Manufacturing
TI - Technology for Industry
TM - Technology Module
TR - Transportation

TE 103**Technical Mathematics (4/4)**

A study of common and decimal fractions, interpretation of a conversion of measurement units, scientific notation, percentages, ratios, direct and inverse variation, linear/system equations, formulas, and special industrial problems.

TE 103A**Basic Math Skills (1/1)**

This is a general overview of math fundamentals involving fractions, decimals, and scientific notation. Practical applications of percentages, signed numbers and prime numbers are also included.

TE 103B**Basic Algebra 1 (1/1)**

Prerequisite: TE 103A – Solving equations, substituting data into formulas, and translating words into algebraic expressions are taught. Common applications such as ratio, proportion, percent, reciprocal, and direct variation are explored.

TE 103C**Basic Algebra 2 (1/1)**

Prerequisite: TE 103B – This module explores the applications of algebra to include calculations using polynomial expressions. Linear equations are used to help visualize and solve many common technical problems using both algebraic and graphing techniques.

TE 103D**Basic Algebra 3 (1/1)**

Prerequisite: TE 103C – Students are exposed to applications of algebra, including calculations of quadratic expressions and solving by graphing, factoring or by applying the quadratic formula.

TE 104**Advanced Technical
Mathematics (3/3)**

Prerequisites: TE 103 – Intermediate mathematics operations, metric system, basic statistics, conversions and measurements, solving quadratic equations and applied geometry. Trigonometric functions and their use in the solution of practical industrial problems involving the right triangle and oblique triangle.

TE 104A**Metrics and Measurement (1/1)**

The study of interpretation and conversion of measurement units, including the metric system. Application problems in reading measurement tools and scales.

TE 104B**Applied Geometry and
Trigonometry (1/1)**

Prerequisite: TE 104A – Principles of plane geometry fundamentals are reviewed including triangles, circles, and polygons. Calculations include area and volume of prisms, cones, spheres, and other common solid shapes. Solving trigonometry problems by proper application of functions. Intermediate trigonometry problems are solved using the laws of sines and/or cosines.

TE 104C**Graphs and Statistics (1/1)**

Prerequisite: TE 104B – Students learn to present statistical data using a wide variety of graphs and charts. Students also learn how to perform basic statistical calculations.

TE 114**Material Science (4/5)**

The study of chemical and physical properties of industrial materials. Emphasis is placed on strength of materials and reporting procedures for experiments and test results. Five hours lecture/lab combination.

TE 132**Electronics Mathematics (5/5)**

See EL 132

TE 272**Industrial Safety (2/2)**

Students learn accepted good practice in safety and its application to technology. Included are safety laws, personal protective equipment, tool safety; chemical, electrical, fire, materials handling, and machine safety; lifting and elevated working procedures; machine guarding, as well as current health-related concerns.

TE 282**Cooperative Education in Technology 1 (3/3)**

Prerequisite: Approval of Co-op Coordinator – Students participate in a cooperative program of work and learning involving area employers. They work a minimum of 15 hours per week under supervision at approved employment, and their performance is monitored by the instructor. In addition, the student is required to turn in written reports of their progress on the job, as well as a semester report summarizing their progress toward a career goal. Students must have the written permission of the appropriate cooperative education coordinator before they register for this course.

TE 283**Cooperative Education in Technology 2 (3/3)**

Prerequisite: Approval of Co-op Coordinator – For students in a second semester of cooperative education. Students participate in a cooperative program of work and learning involving area employers. They work a minimum of 15 hours a week under supervision at approved employment, and their performance is monitored by the instructor. In addition, the student must complete a special project in his major field as approved by the instructor. Students must have the written permission of the appropriate cooperative education coordinator before they register for this course.

TE 298**Independent Study in Technology 1 (1/1)**

Prerequisite: Sophomore standing recommended – Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of technology and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take TE 298. No student may earn more than two credits in independent study.

TE 299**Independent Study in Technology 2 (1/1)**

Prerequisite: Sophomore standing recommended – Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of technology and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take TE 298. No student may earn more than two credits in independent study.

TH – THEATER**TH 114****Ballet 1 (1/2)**

A study of the classical technique with a strong emphasis on body placement and proper alignment. Fundamental ballet exercises, proper stretching, basic center work, and combination of dance steps aimed at developing muscular coordination, flexibility, and stamina. May be used in partial fulfillment of the Physical Education activity credit requirement under the General Requirements for graduation with an associate degree.

TH 115**Jazz Dance 1 (1/2)**

A high-energy, fast-moving course particularly well suited for theatre-oriented students. Basic jazz technique and free style movement designed for a wide range of body movement and a creative means of expression for theatre dancing. Strong focus on body conditioning, stretching, and flexibility. May be used in partial fulfillment of the Physical Education activity credit requirement under the General Requirements for graduation with an associate degree.

TH 116**Tap Dance 1 (1/2)**

Introduction to tap techniques, emphasizing the use of this dance form in theatrical performance. An excellent dance form for rhythm and coordination. Covers all the basics of tap dance and its relationship to the subjects of ballet, jazz, and theatre of today. May be used in partial fulfillment of the Physical Education activity credit requirement under the General Requirements for graduation with an associate degree.

TH 214**Ballet 2 (1/2)**

Prerequisite: TH 114 or equivalent – A continuation of Ballet 1 or for the student with experience. Intermediate technique with barre and center work. Development of physical skill is augmented by understanding of theories and concepts of movement. Performance techniques and the application of ballet training to other dance forms are stressed. May be used in partial fulfillment of the Physical Education activity credit requirement under the General Requirements for graduation with an associate degree.

TH 215**Jazz Dance 2 (1/2)**

Prerequisite: TH 115 or equivalent – A continuation of Jazz Dance 1 or for the student with experience. Emphasis on jazz technique, style, and performance. Explores movement for musical comedy, improvisation, and composition with focus on performance technique and other forms used in the theatre dance. May be used in partial fulfillment of the Physical Education activity credit requirement under the General Requirements for graduation with an associate degree.

TH 239**Script Analysis (2/2)**

Teaches basic skills in analyzing classical and contemporary scripts for production to those interested in acting, directing, or designing in the theater.

TH 240**Performance Studies (3/3)**

This course is designed to enable the student to choose, analyze, and perform the texts of humankind. Texts range from traditional prose, poetry, and drama to rituals, ceremonies, oral histories, and personal narratives. It is a way of looking at human behavior from a point of view that emphasizes actions that can be created. SC 241 and TH 240 are the same course; therefore, credit cannot be granted for both courses

TH 241**College Players 1 (1/1)**

Offers students interested in theatre, acting, and related technical crafts (lighting, costuming, make-up, publicity, properties, and set construction) the opportunity to perform in or assist in the production of one or more plays per semester at the GRCC Spectrum Theater. The student electing this course for credit must audition and perform in any play or fulfill at least 20 hours working on other rehearsal and performance requirements.

TH 242**College Players 2 (2/2)**

Offers students interested in theatre, acting, and related technical crafts (lighting, costuming, make-up, publicity, properties, and set construction) the opportunity to perform in or assist in the production of one or more plays per semester at the GRCC Spectrum Theater. The student electing this course for credit must audition and perform in any play or fulfill at least 40 hours working on other rehearsal and performance requirements.

TH 244**College Players 3 (3/3)**

Offers students interested in theatre, acting, and related technical crafts (lighting, costuming, make-up, publicity, properties, and set construction) the opportunity to perform in or assist in the production of one or more plays per semester at the GRCC Spectrum Theater. The student electing this course for credit must audition and perform in any play or fulfill at least 60 hours working on other rehearsal and performance requirements.

TH 245**Introduction to Acting (3/3)**

A course designed to develop fundamentals of the actor's craft. Emphasis on movement, pantomime, developing the imagination, and performance of cuttings from plays. This is the basic performance class in theatre.

TH 247**Advanced Acting (3/3)**

Offers a second semester of acting to those students who have satisfactorily completed TH 245; explores more fully the use of improvisation techniques and advanced scene study. The work is aimed more toward performance than in TH 245.

TH 248**Introduction to Theater (3/3)**

A course in theatre appreciation. Students will study how a play moves from script to stage by learning about theater structure and the various artists and craftpersons associated with this collaborative art. Students taking this course will be required to attend four productions during the semester. This course carries humanities credit.

TH 250**Cabaret Class and Performance Tour (4/4)**

Students learn how to prepare musical cabaret material and work on solo, duet, and group material. The class consists of an eight-week preparatory section (rehearsal/classwork) followed by a seven-week tour of area middle and high schools.

TH 251**Environmental Tour (4/4)**

This course is offered in conjunction with the Center for Environmental Studies. It involves preparing a play on environmental issues and touring the KISD elementary and middle schools.

TH 255**Acting for Classical Theatre (3/3)**

Prerequisites: TH 245 and TH 247 – This is the third semester's course in action. It focuses on the classical acting style of Shakespeare, Moliere, and the ancient Greeks.

TH 260**Auditioning (2/2)**

Prerequisite: TH 245 – The course familiarizes students with an auditioning process. Recommended for those who need to audition for transfer or future employment.

TH 261**Theatre Technology 1 (2/2)**

The study of technology and craftsmanship involved in backstage production with specific focus on stage carpentry and costume construction. Students in this course will also have the opportunity to work behind the scenes as stage crew for a GRCC Spectrum Theater production.

TH 262**Theatre Technology 2 (2/2)**

The continued study of technology and craftsmanship involved in backstage production with specific focus on lighting and sound production of the theatre. It is recommended that students have taken TH 261 prior to enrolling in this course.

TH 263**Theatre Technology 3 (2/2)**

The continued study of technology and craftsmanship involved in backstage production with specific focus on scene painting and stage rigging. It is recommended that students have taken TH 261 prior to enrolling in this course.

TH 270**Directing (3/3)**

This course covers the principles of stage directing, such as play selection, design, casting, staging, actor-coaching and conceptualization. It culminates in student-directed one-acts at the end of the semester.

TH 298**Independent Study in Theatre 1 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of theatre and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take TH 298. No student may earn more than two credits in independent study.

TH 299**Independent Study in Theatre 2 (1/1)**

Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of theatre and must have the written permission of the supervising instructor, the appropriate Department Head/Program Director, and the appropriate Dean before they register for this course. Students electing independent study for the first time should take TH 298. No student may earn more than two credits in independent study.

TI – TECHNOLOGY FOR INDUSTRY

Technology for Industry courses are developed for training or retraining personnel in business and industry. These courses are developed upon request as needs arise, and are usually taught at each requesting firm's site. For more information call the Technology Division at (616) 234-3660.

TM – TECHNOLOGY MODULE

TM 112

Basic Plastics Processing 1 (1/2)

This module includes a brief introduction to the plastics industry. Special emphasis is placed on describing the common types of polymers on demonstrations of plastics processing equipment. One hour lecture, one hour lab.

TM 120

Fluid Power Applications (1/2)

The fundamental principles of hydraulics and pneumatics are explored in this module using actual equipment in a laboratory environment. Simple calculations of force and exploration of industrial applications will help students understand the uses of fluid power in industry. One hour lecture, one hour lab.

TR – TRANSPORTATION

TR 102

Basic Vehicle Performance (2/3)

This course provides the student an understanding of industry safety practices, automotive professional associations, automotive tools and equipment, fasteners, measurements, bearing, seals, and vehicle performance. In addition, lab time is devoted to application of the above topics. Three hours lecture laboratory combination.

TR 103

Auto Engine Design and Servicing (4/6)

This course provides the student with an understanding of the design, theory, and operation of the internal combustion engine; disassembly, identification, and inspection of automotive engines; use of service manuals; shop procedures; and shop safety. This course also provides engine rebuilding procedures and the use of rebuilding equipment. Six hours lecture laboratory combination.

TR 110

Auto Electrical Systems (2/4)

The construction, operation, and testing of automotive batteries, starting and charging systems; includes a practical introduction to electricity and electrical circuits. Four hours lecture/lab combination.

TR 140

Auto Power Trains (2/4)

The inspection, disassembly, and assembly of conventional automotive driveline components, including clutches, manual transmissions, manual transaxles, drive shafts, and differential assemblies. Students also learn the correct use of service manuals. Four hours lecture/lab combination.

TR 143

Automotive Air Conditioning and Heating (2/4)

Students learn to service automotive heating and air conditioning systems. The design and theory of operation of such systems is studied. Service procedures and shop safety are emphasized. Four hours lecture/lab combination.

TR 147

Automotive Brake Systems (2/4)

Prerequisite: Minimum 10th grade reading level and 9th grade Algebra level – Nomenclature, theory of operation, and service procedures of standard and antilock automotive braking systems; students learn the use of reconditioning equipment, shop safety, and shop procedures. Four hours lecture/lab combination.

TR 148

Steering, Suspension, Alignment (2/4)

Prerequisite: Minimum 10th grade reading level and 9th grade Algebra level – Nomenclature, theory of operation, and service procedures on front and rear suspension systems; alignment principles are learned, with laboratory activities centered on the setting of all alignment angles, shop safety, and shop procedures. Four hours lecture/lab combination.

TR 160

Automotive Driveability (2/4)

Automotive diagnostic skills for computer controlled engine systems including OBDI, OBDII, and OBDIII. Emphasis is on diagnostic charts, information systems, and the use of scanners for testing. Four hours lecture/lab combination.

TR 180

Applied Auto Servicing (4/8)

Provides students with laboratory experiences and practice in automotive service and repair. Work habits, proper service procedures, customer involvement, and management techniques are stressed. Eight hours lecture/lab combination.

TR 210

Auto Ignition Systems (2/4)

Prerequisite: Minimum 10th grade reading level and 9th grade Algebra level – The design, function, and testing of automotive ignition systems. Other topics include analog instrumentation, lighting systems, and accessories. Emphasis is on diagnostic procedures, wiring schematics, electrical troubleshooting, and oscilloscopes. Four hours lecture/lab combination.

TR 220

Auto Electronic Control Systems (2/4)

Overview of the automotive electronic control systems that are available on late model vehicles. Students will learn the operation and service of the following systems: automotive body computers, advanced lighting circuits, electronic instrumentation and chassis electronic control systems. Four hours lecture/lab combination.

TR 230

Auto Fuel Injection (2/4)

Students learn construction, operations, and repair of automotive fuel injection systems. Discussion includes computer control, emission controls, turbocharging and supercharging, shop safety, and service procedures. Four hours lecture/lab combination.

TR 240

Automatic Transmissions (2/4)

Students learn the theory, operation, disassembly, inspection, reassembly, and troubleshooting of automotive automatic transmissions, automatic transaxles, proper service procedures and correct use of shop manuals. Four hours lecture/lab combination.

TR 260

Advanced Power Trains (4/6)

Prerequisite: TR 140 and TR 240 – Students learn to service clutch assemblies, manual drive trains and transaxles, as well as automatic transmissions and transaxles. Hands on procedures, inspections, and diagnostics are studied. Electronic diagnosis of automatic transmission and transaxles is emphasized. Proper service procedures and shop safety practices are taught. Six hours lecture/lab combination.

TR 280**Advanced Auto Servicing (4/8)**

Students review laboratory experiences and practice automotive service and repair. Work habits, proper service procedures, customer involvement, and management techniques are stressed. This course provides the Associate Degree seeking student with technical update and management experiences immediately prior to graduation. Eight hours lecture/lab combination.

TYPING

See BA 130, BA 133

WE – WELLNESS**WE 102****Volleyball (1/2)**

Fundamentals of volleyball. Offered Fall and Winter semesters.

WE 104**Touch Football (1/2)**

Beginning techniques and skill development. Classes meet four hours per week for eight weeks. Offered Winter semester.

WE 105**Basketball (1/2)**

Beginning and intermediate techniques and skill development in basketball in a recreational structure. Offered Fall and Winter semesters.

WE 124**Circuit Training and Physical Fitness (1/2)**

A course designed to provide vigorous activity in a number of selected fitness and motor ability activities and is aimed at developing all the basic physical fitness components. Offered Fall and Winter semesters.

WE 125**Aerobic Conditioning Program (1/2)**

Student participation in aerobic activity. Safety and lifelong learning is a goal of this course. Program includes aerobic fitness, nutrition and knowledge of a healthy lifestyle. Offered all semesters.

WE 127**Yoga, Tone and Stretch (1/2)**

Instruction on yoga, pilates, fitness and athletic stretching. This class will help you build your physical strength, mental, emotional, and inner well being.

WE 128**Soccer (1/2)**

The techniques, team play and rules of soccer. Offered Fall and Winter semesters.

WE 130**Tennis (1/2)**

Fundamentals of tennis for the beginner and intermediate. Offered all semesters.

WE 131**Badminton (1/2)**

Badminton is a recreational sport with great carry over values. It is easy to learn, may be played indoors, and can be played with reasonable safety. This activity lends itself to participation for both men and women. Offered Fall and Winter semesters.

WE 132**Golf (1/2)**

A general physical education course designed to develop skills and techniques. Course fee. Offered Fall and Summer semesters.

WE 133**Cycling (1/2)**

Designed to advance the student from one-speed bicycling to multigear models for leisure time activities or carry over value. Simple repairs, fundamental riding skills, conditioning and trips. Offered Fall and Summer semesters.

WE 140**Personal Defense (1/2)**

A practical course for personal self-defense. Offered all semesters.

WE 141**Beginning Weight Training (1/2)**

Instruction on weight and aerobic machines. Student will be exposed to lifelong learning in areas of safety and training program. Offered all semesters.

WE 142**Beginning Racquetball (1/2)**

An introductory course in racquetball. Offered Fall and Winter semesters.

WE 144**Beginning Swimming (1/2)**

Fundamentals of swimming. Offered Fall and Winter semesters.

WE 145**Intermediate Swimming (1/2)**

Fundamentals of swimming. Offered Fall and Winter semesters.

WE 146**Advanced Swimming and Life Saving (1/2)**

Offered Winter and Summer semesters.

WE 152**Bowling (1/2)**

Fundamentals of bowling for the beginner. Bowling lanes fee. Offered all semesters.

WE 155**Introduction to Free Weight Training (1/2)**

Introduction of free weights. Anatomical and physiological emphasis in the science of resistance exercise. Student will be exposed to lifelong learning in areas of safety and training program. Offered Fall and Winter semesters.

WE 156**First Aid (1/2)**

Prepares people to meet the needs of most situations when emergency first aid is required. Students will meet all requirements of American Red Cross Cardiopulmonary Resuscitation Certification. Offered all semesters.

WE 157**Elementary Games and Rhythms (1/2)**

A general course designed to present a systematic method of teaching physical education in the elementary schools. Offered all semesters.

WE 165**Dynamics of Fitness (1/2)**

Acquaints students with fitness development, methods and techniques in developing lifetime fitness programs; includes aerobic fitness, nutrition, ideal weight, handling stress, and other fitness components. Offered all semesters.

WE 166**Individual Aerobic Conditioning Program (1/2)**

Physical education activity credit given to individual students who desire a scientifically organized program in aerobics. Student must see individual instructor during the first two weeks of the session. Offered all semesters.

ZOOLOGY

See BI 104

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GRCC Employees

Emeritus Faculty.....	229
GRCC Employees.....	229-242



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 1988 – Ms. Elizabeth Knapp, Ms. Theodora Quick
 1989 – Dr. Anne V. Miller, Mr. O. Stewart Myers
 1990 – Dr. Raymond Boozer, Mrs. Lucille Thomas
 1991 – Mr. Leonard Anderson, Mr. John Regenmorter
 1992 – Dr. Albertus H. Elve
 1993 – Dr. Marinus Swets
 1994 – Mr. Anthony LaPenna
 1995 – Mr. Francis J. McCarthy
 1996 – Dr. Allen G. Gerrard
 1997 – Mr. Harvey Meyaard
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Math and Physics Tutorial Lab Coordinator,
Academic Support Center
B.S., Michigan Tech University
M.A.T., Indiana University

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B.S.B.A., Central Michigan University

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M.S.N., Wayne State University

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I.R.C.A. Certified Quality System Assessor

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Information Director,
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M.A., Central Michigan University

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M.A., Western Michigan University

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M.A., Western Michigan University

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Office Personnel, Computer Applications

Holly Taylor

Office Personnel, Nursing Programs

Paulo Teles

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Support Technician II,
Information Technology
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M.S., Grand Valley State University

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M.A.L.S., University of Michigan

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A.A., Grand Rapids Community College

Miriam Thompson

Reference Librarian, Library Services
A.B., University of Michigan
M.S.L.S., Wayne State University

Elizabeth Timmer

Coordinator, Raider Learning Center

David Tolhurst, Sr.

Custodian, Operations

Gary Tolhurst

Custodian, Operations

Karen Tolhurst

Custodian, Operations

Kathleen Tolhurst

Custodian, Operations

Greta Tolliver

Assistant Instructor, Preschool
A.A., Grand Rapids Community College

Lawrence Topolski

Custodian, Operations

David Tower

Instructor, English
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M.A., Michigan State University

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B.A., Michigan State University
M.A., Michigan State University

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B.S., Wilberforce University
M.A., Western Michigan University

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Instructor, Business & Technical Training
Journeyman Toolmaker Certificate

Marvin Tyler

Instructor, Applied Technology
B.S.E.E., Tri-State University
M.S., Ferris State University

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Secretary, Student Activities Office
B.A., California State University

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A.B., Grand Rapids Community College

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M.S.L., Western Michigan University

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Storeroom Manager, Hospitality Education
B.A., Holy Redeemer College

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Ford Fieldhouse
B.S., Aquinas College

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Custodian, Operations

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B.S., University of Michigan
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Business & Technical Training
B.A., Grand Valley State University

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Instructor, Applied Technology
B.S., Ferris State University

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B.A., Michigan State University
J.D., Wayne State University

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B.S., Central Michigan University
M.S., Central Michigan University

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Instructor, Performing Arts
B.A., Michigan State University
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M.F.A., Arizona State University

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Ronald Van Unen

Custodian, Operations

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Head Custodian I, Operations

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M.S.N., Grand Valley State University

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M.A., Western Michigan University

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Coordinator of Labs, Tutors, and
College Evening Activities
B.S., Ferris State University
M.A., Western Michigan State University

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Coordinator of Telecommunication
Systems/ Engineering
Media Technologies
A.A.E.T., Grand Rapids Community College

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Custodian, Operations

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B.A., Aquinas College

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B.S., Central Michigan University
M.E.D., Miami University of Ohio

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A.A., Grand Rapids Community College

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Record's Coordinator, Registrar's
B.A., Western Michigan University

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Employment Training

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Director, Occupational Therapy
Assistant Program
B.S., Central Michigan University
O.T. Certification, University of Pennsylvania
M.A. Western Michigan University

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Information Technology
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A.A., Grand Rapids Community College
B.S., Grand Valley State University

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A.S.A., Muskegon Community College

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M.S., Mississippi State University
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Custodian, Operations

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M.A., Michigan State University

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M.A., Western Michigan University
M.B.A., Grand Valley State University

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Nancy White

Cashier's Office

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B.A., Texas Christian University
M.A., Northwestern University

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Operations

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Staff Relations and Employment
B.A., Michigan State University
M.B.A., Western Michigan University

Michael Wilson

Custodian, Operations

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Secretary, Academic Support Center

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B.A., Central Michigan University
M.A., Central Michigan University

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M.S., Ferris State University

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M.S.N., Andrews University

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M.A., Central Michigan University
M.A., Central Michigan University

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GRADUATION AUDIT WORKSHEET

Diploma to be awarded:

- | | |
|---|---|
| <input type="checkbox"/> Associate in Arts with MACRAO | <input type="checkbox"/> Associate in General Studies |
| <input type="checkbox"/> Associate in Science | <input type="checkbox"/> Associate in Business |
| <input type="checkbox"/> Associate in Science with MACRAO | <input type="checkbox"/> Associate in Applied Arts & Sciences |
| <input type="checkbox"/> Associate in Music | <input type="checkbox"/> 1-Year Certificate |
| <input type="checkbox"/> Associate in Nursing | |

The following chart can be used to keep track of your general education requirements. After completion of 40 plus credits, please submit a graduation audit form to the Registrar's Office.

Basic Requirements

Credits	Course	Semester	Grade
	<input type="checkbox"/> EN-100 and EN-102 or <input type="checkbox"/> EN-101 and EN-102		
	<input type="checkbox"/> Wellness Credit		
	<input type="checkbox"/> PS-110		
	SOCIAL SCIENCES <input type="checkbox"/> Must be from 2 different departments <input type="checkbox"/> Not enough credits		
	HUMANITIES <input type="checkbox"/> Must be from 2 different departments <input type="checkbox"/> Not enough credits		
	NATURAL SCIENCES <input type="checkbox"/> Must be from 2 different departments <input type="checkbox"/> Need 2 science sequences <input type="checkbox"/> Lab class required <input type="checkbox"/> Not enough credits		

OFFICE AND PROGRAM LOCATIONS BY BUILDING

■ APPLIED TECHNOLOGY CENTER

Applied Technology Department
 Apprenticeship
 Art & Bev's Coffee Shop
 Assistant Dean of the School of
 Workforce Development
 Business and Technical Training
 Computer Applications Department
 Drafting and Design Department
 Ferris State University
 The Heritage Restaurant
 Hospitality Education Department
 Job Training Programs
 Manufacturing Department
 Afterwards Café
 Technology Department
 Workbased Learning –
 Apprenticeship Program

■ BOSTWICK PARKING RAMP

Information Systems

■ CALKINS SCIENCE CENTER

Assistant Dean of the School
 of Arts and Sciences
 Biological Sciences Department
 Physical Sciences Department

■ COLLEGE PARK PLAZA

Alumni Office
 Campus Health and Safety Office
 Executive Offices
 Financial Services
 GRCC Foundation
 Health Programs Directors and
 Faculty Offices
 Human Resources
 Institutional Research and Planning
 Mathematics Department
 Faculty Offices
 Nursing Faculty Offices
 Payroll
 Purchasing
 Public Relations

■ GERALD R. FORD FIELDHOUSE

Athletic Office
 General Health and Wellness
 Department and Faculty Offices
 Health Club

■ LEARNING CENTER

AVISS - Audio Visual Instructional
 Support
 Distance Learning
 Library
 Media Technologies Office

■ LYON STREET PARKING RAMP

Facilities Office
 GR Teacher's Credit Union
 Branch Office

■ MAIN BUILDING

Admissions Office
 Cashier's Office
 Campus Police
 Career Pathways
 Center for Environmental Study
 Center for Teaching and Learning
 Child Development Program
 Criminal Justice Program
 Dean of Instructional Design and
 Learning Technologies
 Dean, School of Arts Sciences,
 Associate Provost
 Dean, School of Workforce
 Development/Associate Provost
 Decorating and Design
 Fashion Merchandising
 Financial Aid Office
 Information Office
 Job Placement Office
 Language and Thought Department
 Printing and Graphic Services
 Provost/Vice President of
 Academic and Student Affairs
 Registrar's Office
 Service-Learning Center
 Afterwards Café
 Subway
 Teacher Education Pathway
 Visual Arts Department
 Winchester Alley

■ MUSIC CENTER

Performing Arts Department

■ NORTH BUILDING

Assistant Dean of the School of
 Arts and Sciences
 Behavioral Sciences Department
 Business Departments
 Dental Clinic
 Dental Programs
 English Department
 Nursing Programs
 Occupational Therapy Assistant
 Program
 Professional Development
 Radiologic Technology Program
 Social Sciences

■ TASSELL M-TECSM

Automotive Technology Program
 Occupational/Job Training
 Welding Technology Program

■ SPECTRUM THEATER

Actors' Theatre
 Baking and Pastry Arts Program
 Jewish Theatre
 Theatre Program

■ STUDENT COMMUNITY CENTER

Academic Support Services
 Bookstore
 Cafeteria/Food Service
 Career Resource and
 Assessment Center
 Collegiate Student Newspaper
 Counseling
 Dean of Student Affairs
 Disability Support Services
 Service Learning Center
 Special Populations Program
 Student Activities Office
 Student Services Office
 Student Organizations
 Telecourse Testing Center
 Upward Bound Program

■ THOMPSON M-TEC^{SM**}

(in Ottawa County)
 Computer Aided Design (CAD)
 Electricity/Electronics
 Hydraulics/Pneumatics
 Machine Tooling
 Welding
 CNC
 Tech Math

** Courses are offered in an
 Open Entry/Open Exit format



Admissions Application

Thank you for your interest in Grand Rapids Community College. Please complete this application for admission. All degree-seeking students must provide official high school and/or college transcripts. A \$20 non-refundable application fee is charged. Please refer to pages 2 and 3 of this application for codes and/or descriptions needed to complete this form.

(For office use only) ID# _____ Receipt Number _____ Check
 Money Order
 Cash

PLEASE PRINT CLEARLY

Mr. Mrs. Ms. Name _____ / _____ / _____
(Last) (First) (Middle Initial)

Social Security Number _____ Gender Female Male

Date of Birth (00/00/00) _____ / _____ / _____ (Required) Is English your primary language? Yes No

Are you a U.S. citizen? Yes No (If no, indicate your current status in the U.S.) (See Citizenship Definitions on Page 5):
 Permanent Resident Refugee Political Asylee H-1/H-4 Worker/Dependent B-1/B-2 Tourist/Visitor Other _____ (Specify)

Predominant Ethnic Background (This is not used in the Admission process. Used for reporting purposes only):
 American Indian/Alaskan Native African American Asian/Oriental
 Hispanic White/Non-Hispanic Certified American Indian/Alaskan Native (tribal card)

Maiden/Previous Name _____

Home Address _____ (Street) _____ (Apt. #)
 _____ (City) _____ (State) _____ (Zip)

Mailing Address (Only if different) _____ (Street) _____ (Apt. #)
 _____ (City) _____ (State) _____ (Zip)

I have lived at my home address (above) since (00/00) _____ / _____ (Month/Year) School District Residency Code _____
((Available on back of application, #3))

Previous Address _____ County of Residence _____

Phone _____ / _____ / _____ E-mail address _____

I plan to begin taking classes:
 Term Fall 200 _____ Winter 200 _____ Summer 200 _____

Program Degree Seeking/Transfer Guest (See Category 4, on Page 3)
 Personal Interest/Non-Degree

Academic Plan _____
(Available on back of application, #1)

High School Code/GED _____
(Available on back of application, #2)

Name of High School _____

Date of Graduation (00/00) _____ / _____
(Month/Year)

Colleges Attended _____

I certify that the information on this application form is true and correct, and I realize that giving misinformation may lead to disciplinary action.

Signature (Required) _____ Date _____

The following information is optional and confidential and will be used to assist with your educational program and the College's marketing research.

Have you participated in any music groups? (MUS) Yes No
 Have you participated in any theater/drama groups? (DRA) Yes No
 Have you ever been involved in a volunteer or leadership experience? (COM) Yes No

A. Did either of your parents complete a four-year degree program?
 Yes No

B. What is your primary reason for attending GRCC? (Mark one)
 1 To prepare for a future job
 2 To improve skills needed in present job
 3 To explore courses that will help in making a career decision or change
 4 To complete course work for transfer to another school
 5 To remedy or review basic educational or vocational skills
 6 For personal interest or self-development
 7 Other

C. What is your goal? (Mark one)
 1 Associate degree only
 2 Certificate only
 3 Apprenticeship
 4 Certificate and associate degree
 5 Taking certain courses only
 6 Earn credit to transfer to four-year college
 7 Undecided

D. How did you become interested in GRCC? (Mark all that apply)
 1 Advertising (Newspaper)
 2 College literature/publications
 3 Employer
 4 Family
 5 Friends
 6 GRCC Student (former)
 7 GRCC Student (current)
 8 High School Counselor/Teacher
 9 GRCC Staff person

E. What influenced your decision to attend GRCC? (Mark all that apply)
 1 Cost
 2 Location
 3 Class Size
 4 Reputation
 5 Programs
 6 Financial Aid

F. Do you work? Yes No

Did you remember to sign your application?

#1 ACADEMIC PLAN (Alphabetical order) Please select your plan from those listed below. You may change your plan whenever your educational goals change.

GRCC DEGREE/CERTIFICATE SEEKING AND/OR TRANSFER CATEGORY 1

If you plan to receive a degree or certificate, or transfer to a four year institution, please select from this category the academic plan that best describes your educational goal. All programs listed in this category are Associate Degree Programs unless noted.

OCCUPATIONAL EDUCATION

Accounting	128
Air Conditioning, Refrigeration & Heating, Cert.	924
Application Software	146
Air Conditioning, Refrigeration & Heating Technology	912
Architectural Drafting Technology	925
Automotive Servicing, Cert.	921
Automotive Technology	922
Baking and Pastry, Cert.	156
Business Administration	102
Chemical Technology	651
Child Development	120
Computer Applications, Cert.	108
Computer Applications Technology	109
Computer Electronics	938
Computer Programming	149
Corrections	152
Culinary Arts	151
Culinary Management	155
Data Entry Operations, Cert.	141
Electronic Publishing, Cert.	142
Electronics Servicing, Cert.	926
Electronics Technology	906
Executive Office Administration	112
Fashion Merchandising	121
Industrial Maintenance Technology	985
Industrial Maintenance Technology, Cert.	918
Industrial Technology, Cert.	919
Interior Decorating & Design	122
Internet-Design/Develop	160
Internet-Technical Support	161
Internet-Web Technical Support, Cert.	162
Internet-Web Design/Develop	163
Landscape Management	652
Law Enforcement	808
Legal Office Administration	119
Legal Office Assistant, Cert.	139
MCCVLC-Network Specialist, Cert.	148
Management & Supervision	127
Marketing	125
Marketing, Cert.	116
Mechanical Drafting/CAD, Cert.	928
Mechanical Drafting/CAD Technology	904
Medical Office Administration	118
Medical Office Assistant, Cert.	138
MultiMedia Communication Technologies	145
Networking	147

Office Assistant Studies, Cert.	117
Paint Finishing and Powder Coating, Cert.	980
Para Professional	420
Plastics Manufacturing Technology	935
Plastics Manufacturing Technology, Cert.	945
Quality Science	939
Quality Science, Cert.	940
Recording Technology	212
Technology Option	900
Tooling and Manufacturing, Cert.	920
Tooling and Manufacturing Technology	908
Unix System Administration, Cert.	143
Unspecified Occupational Education	008
Water Purification Technology	650
Welding, Cert.	931
Welding Technology	932
Youth Services	153

HEALTH

Advanced Standing Nursing (Must have PN degree or certificate to apply)	329
Associate Degree Nursing (RN)	321
Dental Assisting	322
Dental Hygiene	324
Occupational Therapy AssistANT	328
Practical Nursing	323
Practical Nursing, Part Time (Days Only)	354
Radiologic Technology	325

TRANSFER

Architecture, Trf	901
Art, Trf	201
Biology, Trf	501
Business Administration, Trf	101
Chemical Technology	651
Chemistry, Trf	701
Child Development, Trf	120
Computer Science, Trf	712
Criminal Justice Trf	807
Crop/Soil Science Trf	520
Distributive Education, Trf	106
Economics, Trf	802
Engineering, Trf	702
Engineering Technology, WMU, Trf	799
English, Trf	401
Environmental Science, Trf	519
Foreign Language, Trf	202
Forestry, Trf	503
Geology, Trf	710
History, Trf	805
Journalism, Trf	402
Kettering University-Engineering, Trf	780
Kettering University-Management, Trf	781
Library Science, Trf	403
Mathematics, Trf	70
Medical Technology, Trf	507
Mortuary Science, Trf	509
MultiMedia Communications Technology, Trf	145

Music Education Choral, Trf	207
Music Education Instrumental, Trf	206
Music Merchandising, Trf	211
Music Perf Instrumental, Trf	208
Music Perf Piano/Organ, Trf	210
Music Perf Voice, Trf	209
Natural Resources, Trf	510
Nursing (Pre-BSN), Trf (Note: This is not GRCC's Nursing Program)	511
Occupational Therapy, Trf	513
Oceanography, Trf	711
Pharmacy, Trf	512
Photography, Trf	927
Physical Education, Trf	602
Physical Therapy, Trf	514
Physics, Trf	705
Plastics Engineering Technology, FSU Trf	798
Political Science, Trf	810
Pre-Dentistry, Trf	515
Pre-Law, Trf	516
Pre-Medicine, Trf	521
Pre-Optometry, Trf	518
Pre-Veterinary Medicine, Trf	518
Psychology, Trf	812
Social Work, Trf	813
Sociology, Trf	814
Speech, Trf	404
Teach Elementary Education, Trf	804
Teach Secondary Ed	803
Teach Secondary Ed Industrial, Trf	917
Theatre, Trf	430
Transfer, Other	007
Water Purification Technology, Trf	650

NON-DEGREE SEEKING OCCUPATIONAL/APPRENTICESHIP CATEGORY 3

If you are primarily interested in learning a new occupational skill or upgrading your occupational skills and do NOT intend to complete a degree or transfer to another college, please select from this category the academic plan that best describes your educational or training goal.

Please Note: Students in Categories 2 and 3 are NOT eligible for financial aid.

Business, Non-Program Major	821
Child Development, Non-Program Major	820
Computer Applications, Non-Program Major	822
Drafting, Non-Program Major	832
Electrical, Non-Program Major	835
Fashion Merch/Inter/Furn, Non-Program Major	828
Health Related, Non-Program Major	846
Hospitality Education, Non-Program Major	826
Tooling & Manufacturing, Non-Program Major	833
Law Enforcement, Non-Program Major	824
Transportation, Non-Program Major	836

APPRENTICESHIP

NOTE: Apprenticeship students must contact the Technology Division at (616) 234-3660 for information and registration.

GUEST STUDENT CATEGORY 4

If you are currently enrolled at another Michigan college or university and wish to take courses at GRCC to transfer back to your primary college, please select this academic plan. Students should complete Part I of the Michigan Uniform Undergraduate Guest Application (available at their current institution or from the GRCC Admissions Office). Students should ask the Registrar at their current college to complete Part II and to forward it to GRCC's Admissions Office.

Guest Student, Non-GRCC Degree	848
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PERSONAL INTEREST CATEGORY 2

If you are primarily interested in learning new information and NOT intending to graduate or transfer to another college at this time, please select from this category the academic plan that best describes your educational goal.

Please Note: Students in Categories 2 and 3 are NOT eligible for financial aid.

Art, Non-Degree	837
Career Exploration	849
Language Arts, Non-Degree	841
Life Science, Non-Degree	829
Mathematics, Non-Degree	831
Music, Non-Degree	838
Physical Education, Non-Degree	842
Physical Science, Non-Degree	830
Photography, Non-Degree	840
Personal Interest, General	850
Social Science, Non-Degree	843
Theatre, Non-Degree	839

CERT = Certificate
FSU = Ferris
TECH = Technology
TRF = Transfer
WMU = Western

#2 HIGH SCHOOL CODES

Allegan High School	0014030	Foreign High School	FOREIGNHS
Allendale High School	0014031	Forest Hills Central High School	0014378
Belding High School	0014078	Forest Hills Northern High School	0014377
Byron Center High School	0014127	Fremont High School	0014343
Caledonia High School	0014130	Fruitport High School	0014345
Calvin Christian High School	0014397	General Education Diploma	.GED
Catholic Central High School	0014370	Godwin Heights High School	0014379
Cedar Springs High School	0014147	Grand Haven High School	0014365
Central High School	0014371	Grand Rapids Baptist High School	0014380
City High School	0014372	Grand Rapids Christian High School	0014373
Community Education Diploma	.COMMED	Grandville High School	0014398
Comstock Park High School	0014178	Grant High School	0014399
Coopersville High School	0014181	Greenville High School	0014404
Covenant Christian High School	0014879	Hamilton High School	0014412
Creston High School	0014374	Holland High School	0014447
East Grand Rapids High School	0014375	Holland Christian High School	0014444
East Kentwood High School	0014384	Home Schooled	.HOMESCH
		Hopkins High School	0014456

Horizons High School	0014921
Hudsonville High School	0014463
Ionia High School	0014474
Jenison High School	0014491
Kelloggville High School	0014382
Kenowa Hills High School	0014383
Kent City Community High School	0014503
Lakewood High School	0014917
Lee High School	0014385
Lowell High School	0014548
Newaygo High School	0014643
Northview High School	0014387
Other Michigan High School	.OTHMHS
Ottawa Hills High School	0014388
Out of State High School	.OTHERHS
Plymouth Christian High School	0014389
Ravenna High School	0014747
Rockford High School	0014763

Rogers High School	0014390
Saranac High School	0014808
South Christian High School	0014392
Sparta High School	0014825
Spring Lake High School	0014826
Thornapple-Kellogg High School	0014590
Tri-County High School	0014459
Union High School	0014394
Unity Christian High School	0014464
Wayland High School	0014897
Westbridge Academy	0014368
West Catholic High School	0014395
West Ottawa High School	0014449
Wyoming Park High School	0014396
Zeeland High School	0014927

#3 SCHOOL DISTRICT RESIDENCY CODES

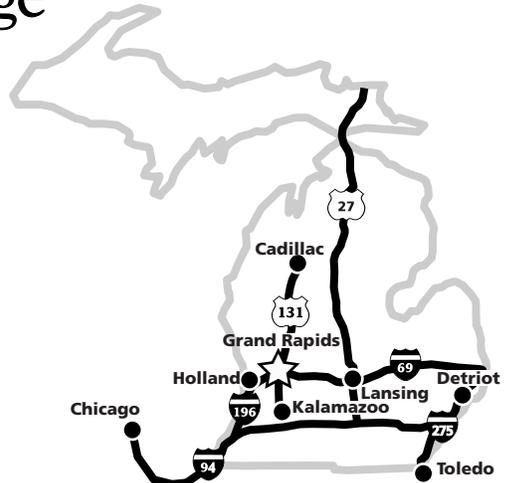
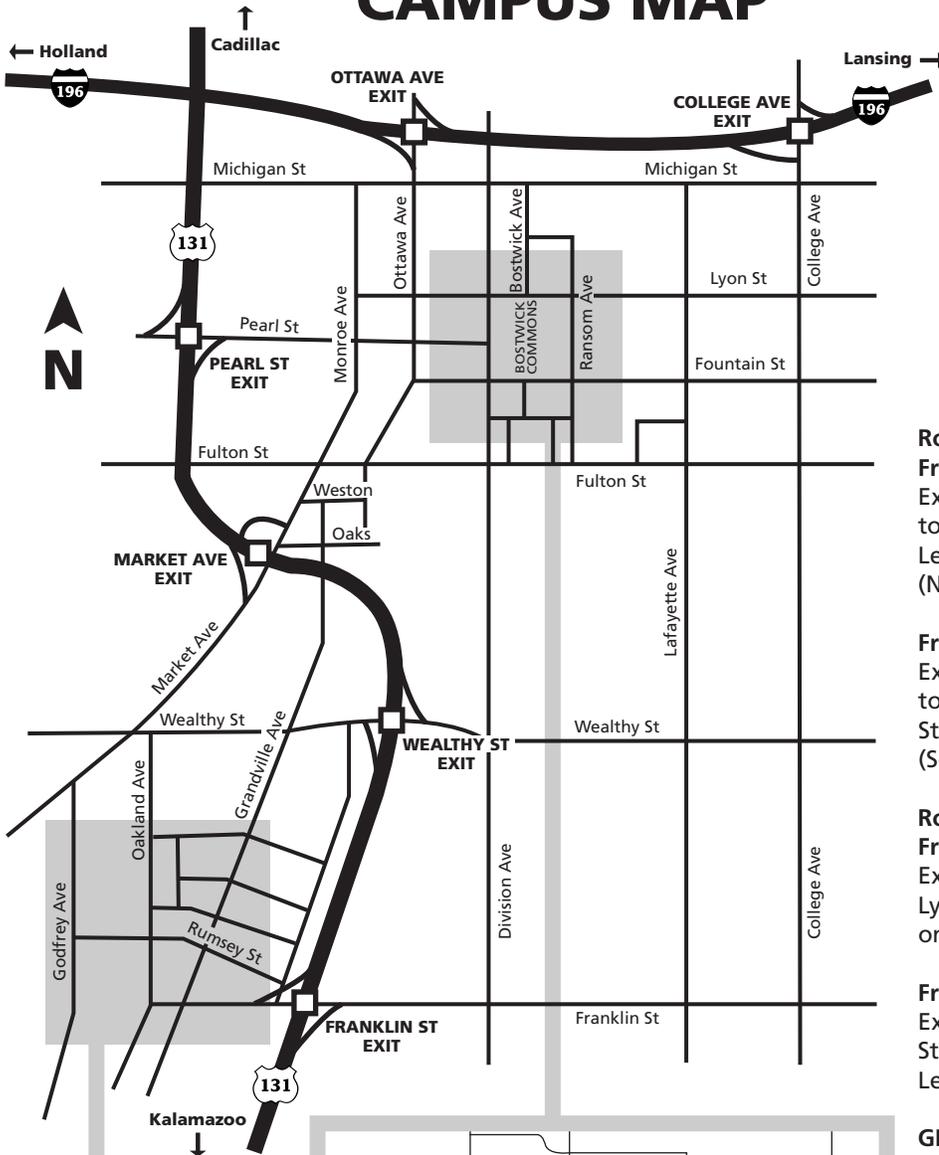
Byron Center	BC	Godwin Heights	GH	Northview	NV
Caledonia	CA	Grand Rapids	GR	Rockford	RF
Cedar Springs	CS	Grandville	GV	Sparta	SP
Comstock Park	CP	Kelloggville	KV	Thornapple-Kellogg	TK
East Grand Rapids	EG	Kenowa Hills	KH	Wyoming	WY
Forest Hills	FH	Kent City	KC	Out of District Resident	IS
Godfrey Lee	GL	Kentwood	KW	Out of State Resident	OS
		Lowell	LW		

Mail the application and \$20 NON-REFUNDABLE fee to:

Admissions Office
Grand Rapids Community College
143 Bostwick Avenue NE
Grand Rapids, MI 49503-3295

Grand Rapids Community College

CAMPUS MAP



Routes from US-131
From North (Cadillac)
 Exit Pearl Street (#85-B). Left (East) on Pearl Street to Ottawa Ave. Right (South) on Ottawa to Fountain. Left (East) on Fountain to Bostwick Commons. Left (North) to enter Bostwick Parking Ramp.

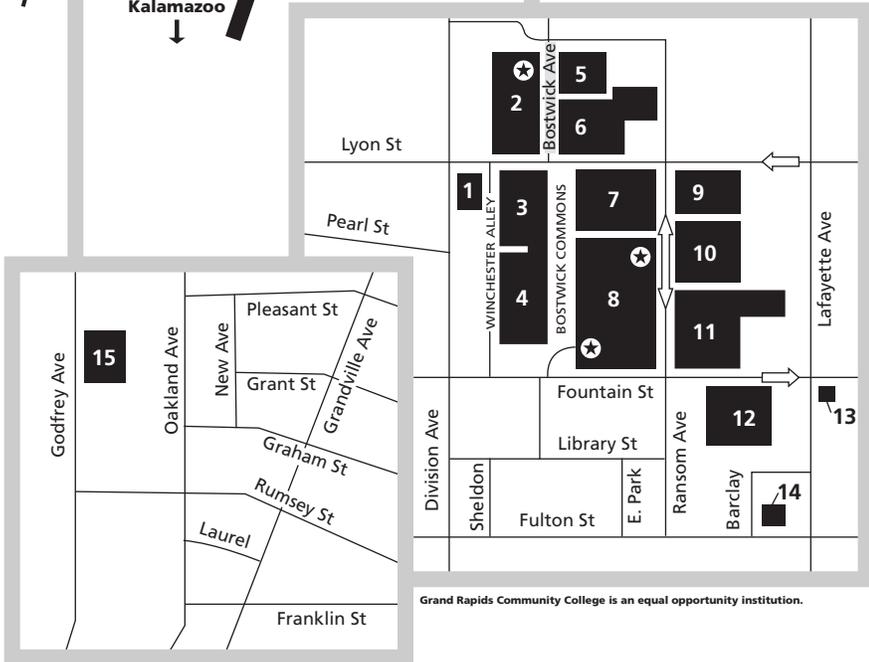
From South (Kalamazoo)
 Exit Wealthy Street (#84-A). Left (East) on Wealthy to Lafayette. Left (North) on Lafayette to Lyon Street. Left (West) on Lyon Street to Ransom. Left (South) on Ransom to enter Bostwick Parking Ramp.

Routes from Interstate-196
From East (Holland)
 Exit College Street (#78). Left (South) on College to Lyon. Right (West) on Lyon to Ransom. Left (South) on Ransom to the Bostwick Parking Ramp.

From West (Lansing)
 Exit Ottawa (#77-C). Ottawa south to Fountain Street. Left (East) on Fountain to Bostwick Commons. Left (North) to enter Bostwick Parking Ramp.

- GRCC Buildings**
1. College Park Plaza
 2. Lyon Parking Ramp
 ⚡ Student/Visitor Parking
 3. North Building
 4. Main Building
 5. Calkins Science Center
 6. Gerald R. Ford Fieldhouse
 7. Student Community Center
 8. Bostwick Parking Ramp
 ⚡ Student/Visitor Parking
 9. Music Center
 10. Learning Center
 11. Applied Technology Center
 12. Spectrum Theater
 13. McCabe-Marlowe House
 14. Preschool (First United Methodist Church)
 15. The Leslie E. Tassell M-TECSM

For locations of independently accessible building entrances, please call (616) 234-4140.



Grand Rapids Community College is an equal opportunity institution.