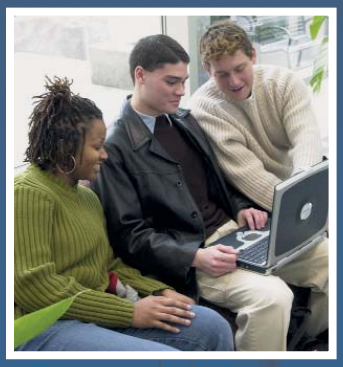
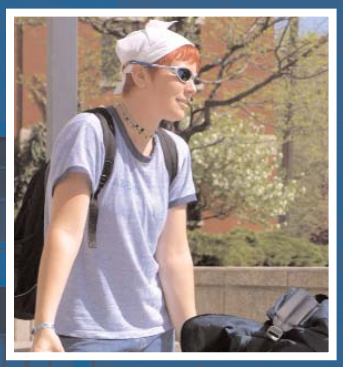
2004-2005





Grand Rapids Community College

2004-2005 College Catalog

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

www.grcc.edu

YOUR COMMUNITY'S COLLEGE ■ YOUR COMMUNITY'S COLLEGE ■ YOUR COMMUNITY'S COLLEGE ■

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**

Admissions
Admission Information and International Students
105 Main. . . . . (616) 234-4100

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

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, and lost and found
418 Main. . . . . (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. . . . . (616) 234-4020

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

Financial Aid
Scholarships, loans, and workstudy program
156 Main. . . . . (616) 234-4030

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

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

Registrar
Registration information, records and transcripts, veterans' program, and graduation audits
148 Main. . . . . (616) 234-4120

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

Departments

Applied Technology
212 Applied Technology Center. . . . . (616) 234-3670

Behavioral Sciences
418 North . . . . . (616) 234-4283

Biological Sciences
317 Calkins Science Center . . . . . (616) 234-4248

Business
204 North . . . . . (616) 234-4220

Child Development
300 Main. . . . . (616) 234-3380

Criminal Justice
266 Main. . . . . (616) 234-4280

Computer Applications
212 Applied Technology Center. . . . . (616) 234-3670

Dental Programs
500 College Park Plaza. . . . . (616) 234-4349

Drafting and Design
212 Applied Technology Center. . . . . (616) 234-3670

English
502 North . . . . . (616) 234-4243

Fashions and Interiors
204 North . . . . . (616) 234-4220

Hospitality
117 Applied Technology Center. . . . . (616) 234-3690

Language and Thought
321 Main. . . . . (616) 234-3544

Manufacturing
212 Applied Technology Center. . . . . (616) 234-3670

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 Calkins Science Center . . . . . (616) 234-4248

Radiologic Technology
502 College Park Plaza. . . . . (616) 234-4349

Social Science
418 North . . . . . (616) 234-4283

Visual Arts
321 Main. . . . . (616) 234-3544

Wellness
Gerald R. Ford Fieldhouse . . . . . (616) 234-3990

Workbased Learning
212 Applied Technology Center. . . . . (616) 234-3660

Academic Deans Office
118 Main
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
347 Student Center . . . . . (616) 234-3925

GRAND RAPIDS COMMUNITY COLLEGE

2004-2005 CATALOG

BOARD OF TRUSTEES

BOARD OF TRUSTEES	TERM
Janice L. Maggini	Chairperson, 2005
Gary P. Schenk	Vice Chairperson, 2009
Ellen M. James	Secretary, 2009
Olivia Margo Anderson	Treasurer, 2007
Michael A. Stearns	Trustee, 2005
Terri A. Handlin	Trustee, 2007
Richard W. Verburg	Trustee, 2009
Juan R. Olivarez, Ph.D.	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 2004-2005

Juan R. Olivarez, Ph.D.

Welcome GRCC Students!

GRCC offers you a choice of paths to follow in reaching for your goals. **Liberal Arts** is where we continue our 90-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 can stay closely attuned to what you really need.** We can pay attention to the needs of the community's changing business scene, partner with other organizations to build a brighter future, and 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. 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-TEC®) in Ottawa County and the Tassel M-TEC® in Grand Rapids**. M-TECs® 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

Juan R. Olivarez, Ph.D.
President

GRAND RAPIDS COMMUNITY COLLEGE

STUDENT CALENDAR 2004-2005

FALL SEMESTER 2004

Wednesday, September 1 . . . . . Day and Night Classes Begin
Monday, September 6. . . . . Holiday
Friday, September 10 . . . . . Weekend Classes Begin
Monday, September 13. . . . . Monday Day and Night Classes Begin
Tuesday, October 19 . . . . . End of the First 7 Weeks
Monday, October 25. . . . . End of the First 7 Weeks—Monday Only Classes
Tuesday, November 2 . . . . . Advising Day
(Evening and Lab classes are also conducted)
Wednesday, November 24 . . . . . College Meeting and
Faculty Instructional/Professional Development
NO DAY AND EVENING CLASSES
Thursday-Sunday, November 25-28 . . . Holiday (all buildings closed)
Tuesday, December 14 . . . . . Day Classes End and Tuesday Evening Exams*
Wednesday, December 15. . . . . Day Exams and Wednesday Evening Exams*
Thursday, December 16 . . . . . Day Exams and Thursday Evening Exams*
Friday, December 17. . . . . Day Exams and Friday Evening Exams*
Saturday, December 18. . . . . Last Saturday Classes
Sunday, December 19. . . . . Last Sunday Classes
Monday, December 20 . . . . . Day Exams and Monday Evening Exams*

WINTER SEMESTER 2005

Thursday, January 13 . . . . . Day and Night Classes Begin
Friday, January 14 . . . . . Weekend Classes Begin
Wednesday, March 2 . . . . . End of the First 7 Weeks
Saturday-Sunday, March 5-6 . . . . . Weekend Classes Meet
Monday-Sunday, March 7-13. . . . . Break
Friday-Sunday, March 25-27 . . . . . Holiday (all buildings closed)
Thursday, April 7 . . . . . Advising Day
(Evening and Lab classes are also conducted)
Thursday, April 28 . . . . . Last Thursday Night Classes*
Friday, April 29. . . . . Day Classes End and Last Friday Night Classes*
Monday, May 2. . . . . Day Exams and Last Monday Night Classes*
Tuesday, May 3 . . . . . Day Exams and Last Tuesday Night Classes*
Wednesday, May 4 . . . . . Day Exams and Last Wednesday Night Classes
Thursday, May 5 . . . . . Day Exams
Friday, May 6. . . . . Commencement

SUMMER SESSION 2005

Monday, May 9 . . . . . Day and Night Classes Begin
Monday, May 30 . . . . . Holiday
Monday, June 27. . . . . End of the First 7 Weeks
Tuesday, June 28 . . . . . Beginning of the Second 7 Weeks*
Monday, July 4 . . . . . Holiday
Tuesday, August 9. . . . . Last Tuesday Day and Night Classes*
Wednesday, August 10 . . . . . Last Wednesday Day and Night Classes*
Thursday, August 11. . . . . Last Thursday Day and Night Classes*
Friday, August 12 . . . . . Last Friday Day Classes*
Tuesday-Thursday, August 16-18. . . . . Exam Days
Monday, August 22. . . . . Last Monday Night 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 the 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 the 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 the 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
- Council on Law in Higher 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 for Foreign Student 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 for 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 Grand Rapids Central High School. 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 '50s, the College's enrollment doubled.

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, GRCC now offers more than 45 occupational programs.

In 1991, Kent County taxpayers voted to redistrict GRJC, which became Grand Rapids Community College. For the first time GRCC 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 Kent Intermediate School District. By 1996, the College was serving more than 25,000 full- and part-time students.

Today, GRCC's eight-block downtown campus includes several classroom buildings, a learning center and library, Spectrum Theater, the Applied Technology Center, a remodeled music building, a fieldhouse with natatorium, a student center (including the new Diversity Learning Center), Bostwick Commons, and the state-of-the-art Calkins Science Center. An off-campus "Learning Corner" has been added to serve the East Hills and Eastown neighborhoods as well as the greater Grand Rapids Community.

In addition, GRCC has two Michigan Technical Education Centers (M-TECs®) in West Michigan. The Patrick Thompson M-TEC®, 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 manufacturing and industry-related occupational programs to conform to a traditional semester time frame. The Leslie E. Tassell M-TEC® in Grand Rapids opened in 2002. This world-class facility offers training in manufacturing, auto service, and building and construction trades.

In Fall 2003, more than 14,000 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 650, all of whom are focused on the College's priorities to be student-centered, collaborative, and flexible.

Throughout its 90-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 Executive 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
  - Applied Technology
  - Business
  - Business and Technical Training
  - Child Development
  - Computer Applications
  - Dental Auxiliary
  - Drafting and Design
  - Fashions and Interiors
  - 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 needed 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
- 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.

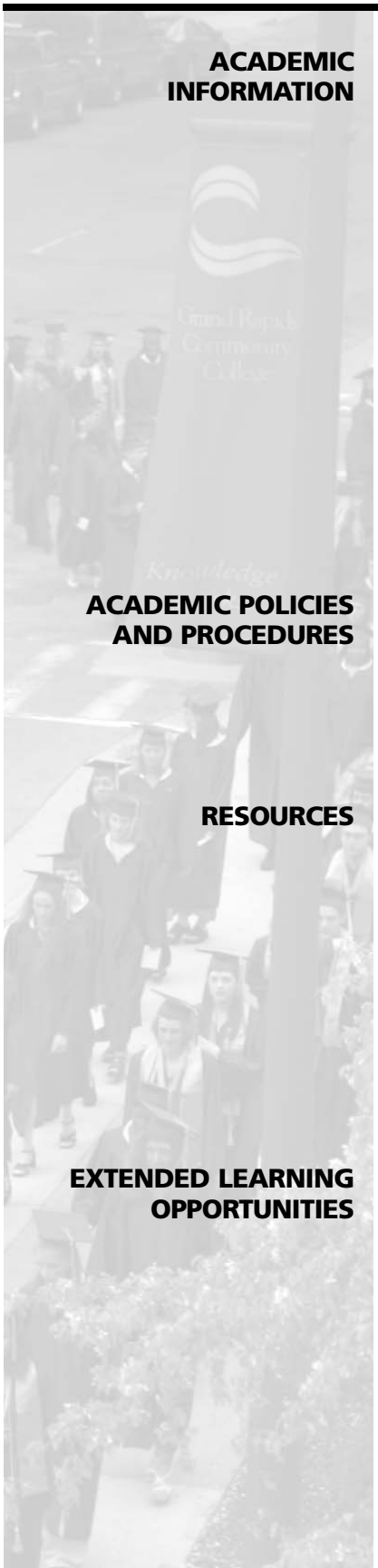
Any student who seeks help under the terms of the Assurance of Quality pledge needs only to go to the academic dean under whose administration the applicable course or courses exist. The two academic deans are the Dean of the School of Arts and Sciences and the Dean of the School of Workforce Development.

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 graduating from Grand Rapids Community College.

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



ACADEMIC INFORMATION

ACADEMIC POLICIES AND PROCEDURES

RESOURCES

EXTENDED LEARNING OPPORTUNITIES

ACADEMIC INFORMATION

ADMISSIONS

(616) 234-4100
105 Main Building
Monday-Friday 8:00 a.m.-5:00 p.m.

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 18 years or older who have the proper background, experience and intellectual capacity to benefit from college-level classes may be admitted to certificate programs or single classes. 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/certificates or planning to transfer to another college must:

1. Obtain an application online at **www.grcc.edu**, from their high school counseling office, or from the GRCC Admissions Office.
2. Submit a completed application to the Office of Admissions, Grand Rapids Community College, 143 Bostwick Ave. NE, Grand Rapids, MI 49503-3295.
3. Submit a $20 **non-refundable** application fee.
4. Request an official high school transcript (college transcript if transferring from another institution) be sent to the Admissions Office.
5. A student must be in a degree/certificate program to receive financial aid.

Applicants wishing to take classes for personal interest (non-degree) must:

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 are advised to apply as early as possible prior to the beginning of the semester.
2. Applications are processed as they are received, with the upcoming semester given priority.
3. Deadlines will be posted each semester for degree/certificate-seeking applicants.

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 Elementary Algebra (MA 104) and English Composition (EN 101) or Business and Technical English (BA 101), 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
ACCUPLACER Algebra	Minimum	Maximum	
	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

Students in grade 11 or 12 and who are at least 16 years of age are eligible to take courses at Grand Rapids Community College. Early College applicants must be:

1. Approved by a high school counselor and/or principal.
2. Currently pursuing a high school diploma.
3. Enrolled full time at their base high school.
4. In need of classes that are not available at their high school.
5. Obtain an application online at **www.grcc.edu**, from their high school counseling office, or from the GRCC Admissions Office.

Students must submit the Early College application, complete with counselor and parent/guardian signatures, a one-time $20 **non-refundable** application fee and a current high school transcript. An application and updated high school transcript must be submitted for each semester a student wishes to attend as an Early College student. These must be submitted to the GRCC Admissions Office by May 15 for Summer and Fall and by November 15 for Winter.

Interested students must meet with their high school counselor and/or principal for further information regarding Early College enrollment.

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. In general, courses completed at accredited institutions are transferable to GRCC; however, 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 and students who have withdrawn from the College in good standing who desire to return to continue their education. It is recommended that they 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 returning after an extended absence from the campus and who desire an associate degree will be required to fulfill the current 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.

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 Services for readmission to the College. (Also see the International Students section "Academic Regulations.")

Guest Students

Students currently enrolled at other Michigan colleges or universities who wish to take Grand Rapids Community College 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

(616) 234-4348

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 Admissions Office.

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

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

See program description for specific program entrance requirements.

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 non-immigrant in possession of or seeking 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. Completed applications are due April 1 for Fall semester and October 1 for Winter semester. GRCC does not admit international students to Summer session.
3. 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.
4. 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.
5. The student must show proof of adequate financial resources for one year. Details are available in the International Student Application.
6. 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.
7. The student must attend the International Student Orientation at the beginning of the first semester of his or her enrollment at GRCC.
8. 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.
9. GRCC may assist students in finding housing in the area. However, since the College does not operate residence halls, housing is not guaranteed.
10. 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.
11. 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 prior 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 Services.

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 April 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 time as certified to the Veterans Administration.

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. One Wellness credit will be waived for veterans.

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 (with the exception of foreign languages). 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 according to their specific program plan or filed until a specific plan is identified.

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 that 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.
- **Automotive Service Excellence (ASE):** The American Council on Education's (ACE) Commission on Educational Credit and Credentials has recommended that credit be granted to those technicians who have passed ASE certification tests and have the required work experience.
- **American Council on Education (ACE):** Above rules apply. Educational credit is granted for extrainstitutional 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 Credentials
  American Council on Education
  ATTN: Registries
  One Dupont Circle, Suite 250
  Washington DC 20036-1193

  GRCC's policies and procedures for awarding credit for extrainstitutional 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 (with the exception of Foreign Languages, as noted 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*
*Score of 62 required for 12 credits.		
German, College-Level		
2 Semesters	GR101, GR102	8
4 Semesters	GR101, GR102, GR231	12*
*Score of 63 required for 12 credits.		
Spanish, College-Level		
2 Semesters	SP101, SP102	8
4 Semesters	SP101, SP102, SP231	12*
*Score of 66 required for 12 credits.		

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 score of 3	CM 103	4*
score of 4	CM 109	5*
score of 5	CM 103, CM 104	8*
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, PH126	8
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

* ***Only with documented evidence of having a year of high school chemistry laboratory experience. Students must produce a completed, graded laboratory notebook to the Chemistry department for consideration of credit.***

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
Health and Wellness	PN117	3
Direct Care 1	PN119	8

Business, BA

Business Word Processing	BA133	2
Notetaking 1	BA140	4
Business Mathematics	BA150	4

Principles of Accounting 1. . . . . BA256 4

Computers, CO
Intro to Computer Applications . . . . CO 101 2
Windows Operating System. . . . . CO 105 2

General Health, GH
Medical Terminology GH110. 2
Structure & Function of Human Body . . GH125. 3

Music, MU
Intro. to Music Theory 1 and 2 . . . . . MU101, MU102 6

Technology, AP, DR, EG, EL, MN, TE
Machine Trades Blueprint Reading . . AP114 2
Machinery's Handbook. AP231 2
Introduction to Drawing EG101 3
Industrial Graphics with CAD EG110 3
Introduction to Drafting. EG120 4
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. 1-3

COUNSELING AND ACADEMIC SUPPORT

Counseling Center
(616) 234-4130
Counselors available:
Monday-Thursday 7:30 a.m.-7:30 p.m.
Friday 7:30 a.m.-5:00 p.m.

Students may call for an appointment. ***Counselors are available on a "Drop-In" basis during peak registration periods.***

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 academic and personal success.

Academic Advising

Students should meet with a counselor or advisor prior to their first semester and are encouraged to meet at least annually after that. At the initial meeting, counselors and faculty advisors are available to help students understand course placement, plan their academic programs, and select course schedules. Students are responsible for exploring possible majors, degrees, and programs of study. In addition, students desiring to transfer credits to another institution are responsible for verifying transferability. Students should keep the Registrar's Office or Counseling Center informed of any changes in their curriculum code (major). Students changing into or out of a health curriculum code should contact the Health Admissions Office, (616) 234-4348.

Career Resources

(616) 234-3890
Room 336, Student Center
Monday-Thursday 8 a.m.-8 p.m.
Tuesday, Wednesday, Friday 8 a.m.-5 p.m.

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.

Assessment Services

(616) 234-4299
Room 336, Student Center
Monday-Thursday 8 a.m.-8 p.m.
Tuesday, Wednesday, Friday 8 a.m.-5 p.m.

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, 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.

Academic Support Services

(616) 234-4149
Room 334, Student Center
Monday-Friday 8 a.m.-5 p.m.

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. Call for evening appointments and additional information.

Tutoring

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 available on a walk-in basis. The Academic Support Center (ASC) will also try to arrange for a student tutor to help a student understand course work and class assignments. 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

Room 334, Student Center

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.

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**
  (616) 234-4140
  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).
- **At-Risk Program**
  (616) 234-4149
  This program provides specialized services for students enrolled in basic courses (English, reading, mathematics, and study skills).
- **Noorthoek Academy**
  (616) 234-4123
  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.
- **Occupational Support Program**
  (616) 234-4155
  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.
- **Student Support Services Program**
  (616) 234-3545
  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 toward 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.
- **Upward Bound Program**
  (616) 234-4150
  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.

Tutorial Labs

(616) 234-4149

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.

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

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 midnight the day the transaction occurs, as part of the drop/add procedure. **Further registration activities will be preventative and the release of 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. Touch-Tone payments using MasterCard or Visa can be made by calling (616) 234-4001. The Web at **www.grcc.edu** may also be used for payments.

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 2004

If you register for classes by the end of business on August 10, 2004, your tuition and fees are due on August 11, 2004. If you register and/or add classes on or after August 11, you must pay at the time of registration.

Winter 2005

If you register for classes by the end of business on December 7, 2004, your tuition and fees are due on December 8, 2004. If you register and/or add classes on or after December 8, you must pay at the time of registration.

Summer 2005

If you register for classes by the end of business on April 19, 2005, your tuition and fees are due on April 20, 2005. If you register and/or add classes on or after April 20, 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 student 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 on **August 1, 2004,** 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 Avenue, 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 $800,000 to over 900 students in the 2003-2004 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 2004-2005 Foundation scholarships awarded from the Financial Aid Office are available from the Financial Aid Office beginning January 2 and are due by March 15, 2004. 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 501 College Park Plaza (CPP), 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 2003-3004. 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 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 part-time jobs to students on campus. 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 FFEL 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 11, 2004.**

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 deducted 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.

Calculation of Financial Need

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 2003-2004 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's degree to be eligible for continued 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.
   1. Grades of A, A–, B+, B, B–, C+, C, C–, D+, D and D– are considered passing.
   2. Grades of E, I, V, W, WP, WF, and NS are not considered passing and must be considered attempted credits.
   3. 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).
4. 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's 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's 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 Curricula Section of this 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.
1. When students have attempted the maximum number of credits, financial aid will be terminated.
2. 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.
3. All grades listed in paragraph B, Items 1 and 2, and repeated courses must be counted in determining the maximum number of credits.
4. 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 discuss 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**.

1. Web-based registration is available 24-hours a day, seven days a week, at **www.grcc.edu**. Assistance with Web registration is available at computer labs across campus and at the Student Technology Help Desk at (616) 234-3123.
2. For Automated Touch-Tone Telephone Registration, call (616) 234-4001. Touch-Tone Registration and Grade Reporting are available to the general student population 24-hours a day, seven days a week. (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.
3. Students may register in person at the Registrar's Office, Room 148 Main Building, or at 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 or online at www.grcc.edu:

- **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 nine Associate's Degrees:

- **Associate in Applied Arts and Sciences**
- **Associate in Arts**
- **Associate in Business**
- **Associate of Fine Arts in Fine Arts**
- **Associate of Fine Arts in Photography**
- **Associate in General Studies**
- **Associate in Music**
- **Associate in Nursing**
- **Associate in Science**

Associate in Applied Arts and Sciences

For students wishing to pursue two years of occupationally

oriented study 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 Arts

Students who plan to transfer to liberal arts and sciences 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 Guide. 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 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 of Fine Arts in Fine Arts

Students who plan to transfer to a Bachelor of Fine Arts program at a college or university can learn more about this new GRCC degree by contacting the Visual Arts Department Head.

Associate of Fine Arts in Photography

Students who plan to transfer to a Bachelor of Fine Arts program in photography at a college or university can learn more about this new GRCC degree by contacting the Visual Arts Department Head.

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.

Associate in Music

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 Bachelor of Science in Nursing (B.S.N.) degree.

Associate in Science

CERTIFICATES

Certificates are awarded for satisfactory completion of courses of study requiring less than 62 credit hours of course work. A 2.0 cumulative grade point average is required for graduation with a certificate. A minimum of 15 credits of course work must be completed at GRCC.

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's 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. Any deviation from this rule must be approved in writing by the appropriate Dean.

GRADUATION REQUIREMENTS

Associate's 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.

c. At least six credits of English composition are required for students matriculated for the Associate in Arts, Associate of Fine Arts in Fine Arts, Associate of Fine Arts in Photography, Associate in Music, Associate in Nursing, 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, 236, 237
AT 105, 106, 270, 271	
EN (any 200 level)	PL
Foreign Language (except Occupational Spanish)	PO 105
HU	SC
	TH 248

- **Group II – Social Sciences:**

AN	GE	PY
CJ 110, 111, 140, 235, 236, 237	GO	SO
	HS	SS
EC	PS	SW

- **Group III – Natural Sciences and Mathematics:** ***(Courses identified as "non-lab" cannot be used to satisfy "laboratory science" requirements.)***

AS 103, 102	GL
BA 150, 254 (non-lab)	MA (any courses except MA 003) (non-lab)
BI	
CM (any courses except CM 100 and CM 102)	PC
	PH
CO 124, 127, 225, 227 (non-lab)	PY 281 (non-lab)
	TE 103, 104, 132 (non-lab)
GE 132	

**** Students are encouraged to verify with the transfer institution that select courses will meet distribution requirement for that institution.***

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	BI 103 and 215	BI 104 and 215

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 131 and 129	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 104 and 113	PH 126 and 245
CM 236, 237 *and* CM 212 and 282	CM 238, 239	PH 125 and 126

ASSOCIATE DEGREE GROUP DISTRIBUTION REQUIREMENTS

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

Associate in Applied Arts and Sciences

1. 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.

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
  EN 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 (650)

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:
PS 110

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, General Option (Code 010)

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.

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 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 of Fine Arts in Fine Arts

Students intending to complete an AFA in Fine Arts degree should consult with the Visual Arts Department Head for advice in selecting their courses.

Associate of Fine Arts in Photography

Students intending to complete an AFA in Photography degree should consult with the Visual Arts Department Head for advice in selecting their courses.

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.

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:

a. 16 credits in music theory
b. 9 credits in music history and literature
c. 8 credits in applied music
d. 4 credits in technique
e. 4 credits of ensemble
f. 4 credits of interpretation
g. 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 126 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 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 det***

GENERAL LEARNER OUTCOMES

As Grand Rapids Community College continues to focus on improving student learning, a system for assessing students' achievement of General Learner Outcomes (GLO) 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. At least 15 credits must be earned from GRCC.

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. 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 online may contact the Student Technology Help Desk. The Registrar's Office will mail grades 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. 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 indi-

vidual 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 Fall 2000 transfer-out status of students enrolled during the semester and for whom 150 percent of the normal time-to-complete had elapsed.

During the Fall Semester of 2000, 1,789 first-time, full-time, certificate- or degree-seeking undergraduate students entered Grand Rapids Community College. After three years (i.e., as of August 31, 2003), 18.6 percent (333) of these students had graduated from GRCC or completed their programs and 31.9 percent (570) 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 $1^1/_2$ 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

Privacy Statement

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, the College will be using student Social Security Numbers in order to compile summary reports. Section 113 of the Carl D. Perkins Vocational and Technical Education Act, 20 USC 2323, and section 122 of the Workforce Investment Act of 1998, 29 USC 2842, requires **Grand Rapids Community College** and the State of Michigan to assess the effectiveness of vocational and technical education programs aimed at training, placement, and retention of students in employment. Although these laws require that performance reports be compiled based on wage record information, neither law requires students to give their Social Security Numbers (SSN) to the College.

The College plans to use your student SSNs in order to gain access to individual wage records and to compile required WIA and Perkins Act reports. These reports will assist the College to improve vocational and technical education programs. By improving programs, the College will be better able to serve both employers and employees. Student wage record information is confidentially maintained, based on student SSNs, by the State of Michigan.

Neither the College nor the State of Michigan will disclose your SSN or wage record data to any person or entity unless legally permitted to do so. Any personally identifying wage record data will be destroyed by the College as soon as all required statistical analyses have been performed, or when the information is no longer needed, whichever date comes first.

Students may choose to notify **Grand Rapids Community College** that they do not wish to have their Social Security Number used for the purposes described in this notice.

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

(616) 234-3453

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

GRCC is committed to investigate and resolve all complaints. Any student may file a complaint. Complaints will be dealt with in confidence unless the circumstances are such that a formal investigation is required. To be timely, complaints must be filed within 90 days of the incident and must be made by the individual complainant.

If you have a complaint and have not been able to resolve the issue with the individual or your supervisor, phoning one of the following individuals will initiate a complaint resolution process. Following a discussion of your complaint, you will be asked to provide GRCC with a written complaint.

For Academic Concerns or Incidents:
Dean or Assistant Dean, or the Department Head for that academic area. Call (616) 234-4000 and ask for the specific academic area or Dean.

For Criminal Concerns or Activity:
Campus Police: (616) 234-4010.

For Student Behaviors or Incidents:
Dean of Student Affairs: (616) 234-3925.

For Staff and Student Employment Discrimination, Harassment or Disability Discrimination:
Labor Relations, Affirmative Action, and Equal Employment Opportunity Department, (616) 234-3453.

If you have concerns or questions and are unsure of whom to call, please call the Director of Human Resources/Labor Relations & EEO, (616) 234-3453.

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, Room 368, Student Center, (616) 234-4142.

2. Director of Human Resources/Labor Relations & EEO, 404B College Park Plaza, (616) 234-3972.
3. Director of Facilities, 225 Bostwick Avenue, 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, 503, College Park Plaza.

RESOURCES

APPLIED TECHNOLOGY CENTER

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

ATC Conference Services

(616) 234-3715

The ATC Conference Center facilitates meetings and activities for educational, business, and non-profit organizations. Services include:

- Meeting/Event space
- Food and beverages
- Teleconferencing
- Audio and visual equipment
- Exhibit space

Patrick A. Thompson M-TEC® (Ottawa County)
Information Office
(616) 738-8935
(877) 702-8600

BOOKSTORE

(616) 234-3880

The GRCC Bookstore is located in the Student Center at 122 Lyon Street, NE. The Bookstore's hours vary throughout the year. Call the Bookstore 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
Room 9, G1 Main Building

Graphic Services 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.

Printing Services 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**.

GERALD R. FORD FIELDHOUSE

(616) 234-3990

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**
- **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
- **Job Training**
  - Auto Mechanics
  - Computer Aided Design (CAD)
  - Computer Applications
  - Construction Trades
  - Machine Tool Operation
  - Welding

JOB PLACEMENT OFFICE

(616) 234-4170
Room 103, Main Building
Monday-Friday 8:00 a.m-5:00 p.m.

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)

LIBRARY SERVICES

(616) 234-3870 for Library Hours
(616) 234-3868 for Reference Help
www.grcc.edu/library
Learning Center
Hours: **Summer Session**

Monday-Thursday	8:00 a.m. - 8:00 p.m.
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.
Verify hours by calling or checking online.

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 12,000 electronic books, including reference materials);
- 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.

MEDIA TECHNOLOGIES

(616) 234-3830
Learning Center

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.

Television 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 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 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
(616) 234-4116 for Student Question Hotline
Hours*: Monday-Thursday 8:00 a.m.-6:00 p.m.
Friday 8:00 a.m.-5:00 p.m.

The Student Activities Office (SAO), located on the first floor of the Student 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
- DASH parking
- Area rental housing listing
- Student organization information
- FAX and copy services
- Campus leadership opportunities

* 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 Center.

SERVICE-LEARNING CENTER

(616) 234-4162
Room 59, G2 Main Building
Hours: Monday-Thursday 8:00 a.m.-6:00 p.m.
Friday 8:00 a.m.-3:00 p.m.

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)

EXTENDED LEARNING OPPORTUNITIES

ATHLETICS

(616) 234-3990

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.

Students have the opportunity to participate in:

- Football
- Women's tennis
- Women's basketball
- Women's softball
- Golf
- Women's volleyball
- Men's basketball
- Men's tennis
- Baseball

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 services.

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: instructor-led, self-paced, distance learning (with or without an instructor), and hands-on technical instruction–for credit and non-credit. Classes are held on site or at one of the College locations in Grand Rapids and Holland.

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

- **Pre-Employment Training Assessment**
- **Employee Skill and Job Assessment**
- **Allied Health** - Continuing education programs are offered throughout the year in nursing, dental hygiene, dental assisting, radiologic technology, etc. A certification for nursing assistants (CNA) is also available through the year. For registration or additional information, call (616) 234-4081.
- **Customized Apprenticeships**
- **Grant Writing Services**
- **Construction Trades Skills Development** - Continuing education programs are offered in a variety of construction trades skill areas including electrical code updates, plumbing, first aid/CPR, safety programs, blueprint reading, project management, concrete finishing, and welding. Construction trades

apprenticeships are also available. For more information call (616) 234-3600.

- **Computer Applications Skills** - Internet Explorer; Netscape Communication; keyboarding; all levels of Access, Excel, Outlook, Word, Word Perfect, and PowerPoint; Windows.
- **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.
- **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 lean manufacturing.
- **Organizational Development Skills** - business plans, strategic plans, project management, manufacturing principles, work-place organization, train the trainer, team building, customer service, supervisory and leadership training, problem solving, and communications.
- **Public Seminars** - B&TT offers public seminars in a variety of areas such as health, construction, manufacturing, leadership, plastics, and quality management systems.
- **Consulting Services** - B&TT provides consulting services to organizations throughout West Michigan. These services may include internal auditing, problem-solving, coaching, program design, and strategic planning.

For more information regarding customized classes, call the Business & Technical Training Office or visit our Web site at **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 or check the Grand Rapids Community College Web site: **www.grcc.edu** (click on departments, career pathways, and then articulation).

CONTINUING EDUCATION UNITS

(616) 234-3600

Effective July 1, 2004, GRCC will be able to grant Continuing Education Units (CEU's) for certain pre-approved training and continuing education activities. Please call for more information on CEU's or eligibility for receiving CEU's.

THE DIVERSITY LEARNING CENTER

(616) 234-3390

The mission of the GRCC Diversity Learning Center (DLC) 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 relationships, 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
(800) 998-3425

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
- Digital Animation and Game Design
- Elementary Education
- Health Care Systems Administration
- Industrial Technology and Management
- Manufacturing Engineering Technology
- Medical Records Administration
- Nursing
- Product Design Engineering Technology
- Quality Engineering Technology
- Secondary Education
- Technical Education

Associate's Degree Programs
- Medical Records Technology

Professional Development Certificate Programs
- Advanced Construction Management
- Billing & Coding
- Construction Administration
- International Business
- Philanthropic Education
- Philanthropic Studies
- Quality Technology

Master's Degree Programs
- Business Administration (MBA)
- Career and Technical Education
- Criminal Justice Administration
- Curriculum and Instruction
- Information Systems Management

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.

Call 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.

FLEXIBLE LEARNING OPTIONS

Distance Learning Options

(616) 234-3845

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.

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. Online classes are designated as "Internet" in the ***Schedule of Classes*** under "TYPE." 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 or online 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 by the most respected and experienced educators. 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 ComCast Cable Channel 28. Videotapes of all GRCC telecourses are available for rent at the Media Technologies office, located in Room 119 of the Learning 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. Telecourses are listed as "TV" in the ***Schedule of Classes*** under "TYPE."

Live Cable TV Courses:

Live cable classes are taught on the GRCC campus from one of the five Distance Learning rooms and delivered via

ComCast 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-TEC® and to 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 Center (LC), Downtown Campus
- Holland: Thompson M-TEC®, 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

(616) 234-4413

The Honors Program provides enriched experiences in designated Honors courses, seminars, contract courses, research, study abroad, and service-learning for students who demonstrate a distinctly high level of academic achievement, motivation, and creativity. Current GRCC and transfer students are eligible to participate in the Honors program if they have earned a minimum of a 3.5 GPA over at least 12 hours of college coursework. Incoming students are eligible for provisional membership if they have a high school GPA of 3.5 or higher. For more information about the application process and the program offerings, contact the Coordinator of the Honors Program.

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

(616) 234-3903

"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.

LEARNING CORNER @ WEALTHY

(616) 234-3040

The Learning Corner@Wealthy is a collaborative initiative being led by Grand Rapids Community College to foster regeneration of the Wealthy Street neighborhood, through community-based literacy activities. As the community's college, GRCC is committed to providing leadership, activities, and services that meet community learning needs in unique and different ways.

The goals of the Learning Corner@Wealthy are to:

- Provide participants with the academic foundation necessary for personal success.

- Provide participants with the skills and knowledge they need to be successful in their employment and career goals.
- Provide participants with knowledge of, and access to, systems to enable them to resolve barriers to success.
- Facilitate linkages to and between organizations and institutional systems to enhance community vitality in the Wealthy Street neighborhood.
- Provide a learning opportunity for GRCC faculty, staff, and students.

Activities at the Corner are focused on four areas: Academic, Employment and Career Preparation, Individual and Family Support, and Neighborhood Vitality.

OLDER LEARNER CENTER

(616) 234-3483
Rooms 215-217, Calkins Science Center

The Older Learning Center offers adults 55 and older opportunities for life-long learning and life enrichment, including the Senior Computer Club, Senior Health Club, and Grandparents Raising Grandchildren Educational Support Group. The Older Learner Center also produces *Successful Aging*, an award-winning television program that is distributed nationally on video and broadcast on over 26 cable stations throughout Michigan; administers a number of community-wide program initiatives including Senior Leadership Grand Rapids and the Grand/Kent Community Consortium on Successful Aging; has a leadership role in the Kent County Caregiver Resource Network and Greater Grand Rapids End of Life Coalition; and sponsors public forums, conferences, training and events within the community on issues relating to an aging America.

THEATRE

(616) 234-3998
Monday-Friday 10:00 a.m.-5:00 p.m.

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.

WORKBASED LEARNING
APPRENTICESHIP PROGRAMS

Construction Trades
(616) 234-3009

GRCC offers non-credit apprenticeship training for the construction industry that meets the Related Training Instruction (RTI) requirements of the U.S. Department of Labor, Bureau of Apprenticeship and Training (BAT), for registered apprenticeship programs. Employers who have apprenticeship programs registered with the BAT can send their apprentices to the GRCC/Leslie E. Tassell M-TEC® through an established sequence of trade-related courses or contract with the College to develop a customized training program.

Most of the Construction Trades programs are accredited through the National Center for Construction Education and Research (NCCER), utilizing curriculum materials based on a national skill standard that requires both written and performance testing.

Upon completion of the program, the apprentice will receive a Certificate of Completion from the BAT, the NCCER, and GRCC. Apprentices desiring to continue their education by obtaining an associate's degree can apply to receive articulated credit for their Certificate of Completion.

For a complete description of the Construction Trades apprenticeship program, please visit the College Web site, **www.grcc.edu**, then select "Departments/Construction."

Manufacturing Trades
(616) 234-3660

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.

HIGHER EDUCATION OVERVIEW

Grand Rapids Community College is authorized to grant certificates and associate's degrees. Associate's degrees are often referred to as "two-year" degrees. The use of the terms "two-year college" and "four-year institution" is common. This is not an indication that degree completion is required in two calendar years or four but simply that a degree could be earned within that time frame. In fact, there are generally no time constraints for completing degree requirements, particularly at the community college level. As always, there are some exceptions, usually in health programs of study and law enforcement.

The most common two-year degree is the Associate in Arts (AA), which refers to a program of study that includes no less than 62 semester credits. GRCC also awards several other associate's degrees: the Associate in Science (AS), Music (AM), Nursing (ADN), Business (AB), Applied Arts and Sciences (AAAS), Associate of Fine Arts in Fine Arts (AFAFA), Associate of Fine Arts in Photography (AFAP), and General Studies (AGS). Requirements for each degree are described in detail on pages 22-26.

The Associate in Arts and the Associate in Science are the two degrees most often referred to as transfer degrees. These degrees include a distribution of credits that covers general education requirements for many four-year colleges and universities in Michigan. This general education component of the Associate in Arts and the Associate in Science degrees is called the MACRAO and consists of 30 credits. The MACRAO is discussed in detail on page 26.

Courses required for certificate programs, generally 30-32 credits, are often found in their counterpart Associate of Applied Arts and Sciences degree. The AAAS is designed to prepare students for employment. Many of these associate's degrees also transfer to particular programs.

Students attending GRCC may choose their course load. To be considered full-time, a student must be enrolled in 12 or more credits for the semester. Part-time enrollment would consist of any number of credits less than 12 in any given semester. The number of credits in which a student enrolls in influences financial aid. Some scholarships and insurance carriers may require full-time enrollment.

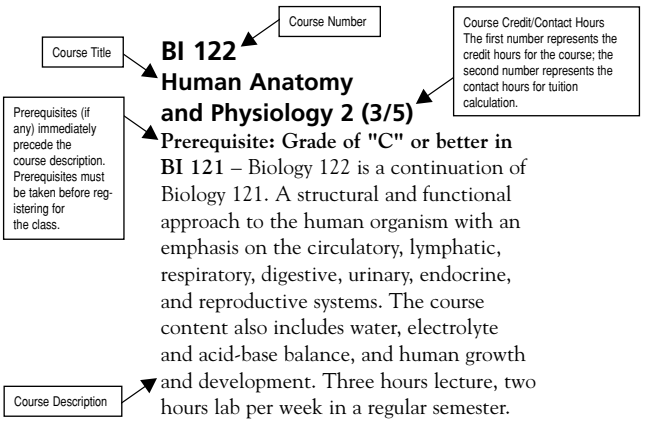
GRCC acts as a bridge to the bachelor's degree. The bachelor's degree acts as the step to graduate work that would lead to a master's or doctorate in a particular field.

Help in choosing a major can be found at the Career Resource Center on the third floor of the Student Center. Individual appointments are available along with seminars and workshops. The Career Resource Center offers evaluation opportunities, seminars, and workshops to help students clarify career decisions.

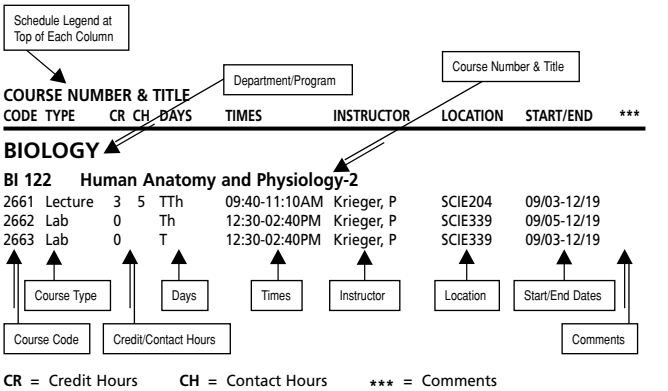
GRCC College Catalog vs. *GRCC Schedule of Classes*

GRCC publishes two documents designed to help students select and enroll in courses: the ***College Catalog*** and the ***Schedule of Classes***. Each includes a section called COURSE DESCRIPTIONS. The ***Schedule of Classes*** includes information for choosing, enrolling in and attending classes. Following are examples and explanations of the information.

Example of Course Description:



Example of Course Schedule:



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

Accreditation

If a school is accredited, it has achieved certain standards set by its accrediting agency. 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, which people sometimes refer to 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 has graduated from an accredited program.

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 and most are online.
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 grade point averages.

Transferability

Although most colleges and universities accept credits from other institutions that are accredited, not all courses transfer everywhere. Since GRCC is institutionally accredited, its credits are very 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—which 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.

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.

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.

GRCC counselors are the best source of information about requirements at four-year schools. 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 also 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 TRANSFERABILITY

This part of the Catalog contains information about the specific requirements for many 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 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.

■ GRAND RAPIDS COMMUNITY COLLEGE www.grcc.edu

Associate in Arts Degree with MACRAO Group Requirements

For **Associate Degree Group Distribution Requirements**, see page 24. For **MACRAO** Agreement requirements, see page 26.

- **Group I – Humanities:**

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

- **Group II – Social Sciences:**

AN		GE		PY	
CJ	110, 111, 140,	GO		SO	
	235, 236, 237	HS		SS	
EC		PS		SW	

- **Group III – Natural Sciences and Mathematics:**
  (Courses identified as "non-lab" cannot be used to satisfy "laboratory science" requirements.)

AS	103, 102	GL	
BA	150, 254 (non-lab)	MA	(any courses except
BI			MA 003) (non-lab)
CM	(any courses except	PC	
	CM 100 and CM 102)	PH	
CO	124, 127, 225,	PY	281 (non-lab)
	227 (non-lab)	TE	103, 104, 132
GE	132		(non-lab)

**** Students are encouraged to verify with the transfer institution that select courses will meet distribution requirement for that institution.***

■ ALMA COLLEGE www.alma.edu (updated 12/03)

Alma College will evaluate all courses, including general education, for transferability. Some additional coursework will be needed to complete Alma's general education sequence. Specific information regarding alignment of Alma's general education courses with courses from your college can be obtained through Alma's Transfer Coordinator, Ruth Majerle, at (616) 365-3074. Please note that students must earn a "C" or better in courses for tranfer to Alma College.

■ AQUINAS COLLEGE www.aquinas.edu (UPDATED 12/03)

Every student entering Aquinas College who has completed an **Associate in 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 in Arts Degree should contact Aquinas College Admissions for General Education requirements.

Transfer Guide information available on the following programs:

- Biology
- Business administration
- Communications
- Education: elementary level teacher training, early childhood minor
- English
- Liberal arts
- Pre-law
- Psychology
- Social work

■ CALVIN COLLEGE www.calvin.edu (UPDATED 12/03)

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

Transfer Guide information available on the following programs:
- Accounting
- Business
- Computer science
- Education: elementary level teacher training
- Education: secondary level training
- Medical technology
- Pre-dental and pre-medical

■ CENTRAL MICHIGAN UNIVERSITY (UPDATED 12/03)
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 100 or 101 and 102, English Composition: 6 semester hours ("C" grade or better.) EN 100 and 102.

Transfer Guide information available on the following programs:
- Business administration
- Education: elementary level teacher training
- Education: secondary level teaching
- Education: special education/elementary
- Fashion merchandising and design
- Medical technology
- Music and music education
- Public health
- Sports medicine

■ CORNERSTONE UNIVERSITY (12/03)

Students interested in transferring to Cornerstone University should contact the Transfer Admissions Counselor at Cornerstone University, 1001 East Beltline N.E., Grand Rapids, Michigan 49525, (616) 222-1426.

■ 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. If an associate's degree is achieved at Grand Rapids Community College, Davenport University will accept all credits for all courses for which a passing grade has been attained.

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 toward 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 toward 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 have partnered to offer a student the opportunity to earn a Bachelor's degree through the 3+1 agreement. Earn your Associate's degree plus take an additional year of classes at Grand Rapids Community College before transferring to Davenport University for your final year. Please contact a Davenport University Admissions Representative if interested in the 3+1 program anytime prior to scheduling your third year of classes. Below are a few programs offered at Grand Rapids Community College that will transfer in under the 3+1 agreement:

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
- Legal Studies
- Management and Supervision
- Marketing
- Multimedia Technology
- Tooling and Manufacturing Technology

Please contact a Davenport University Admissions Representative to discuss the curriculum and other programs that will work under the 3+1 agreement. For more information, please call (616) 732-1200.

■ EASTERN MICHIGAN UNIVERSITY (UPDATED 12/03) 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.

Transfer Guide information available on the following programs:
- Business administration
- Education: elementary level teacher training
- Education: secondary level training
- Education: special education/elementary

■ 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.

Communication Competence 12
- EN 100 or 101
- EN 102
- SC 131 or SC 135 or SC 227
- Upper-level requirement—to be completed at FSU

Quantitative Skills 3-4
- MA 107 or higher (or proficiency)

Scientific Understanding 7
- Must complete at least one lab science
- Select any science course from the following subject areas and/or courses: Astronomy, Biology, Chemistry, GE 132, 210, Physical Science, Physics

Cultural Enrichment 9
- Must complete a minimum of 3 courses in at least 2 different subject areas
  - One course must be at 200-level or higher
  - No more than 5 semester credit hours in Music or Theatre activities
- Select any course from the following subject areas and/or courses: Art, Art History, EN 247, 248, Foreign Language, History, Literature, Music, PO 104, SC 241, TH 240, Theatre, and any Humanities course except Ferris HUMN 217

Social Awareness 9
- Must complete a minimum of 3 courses in at least 2 different subject areas
  - Complete one Foundation course from the following list: AN 201, 210; EC 251, 252; GE 135, 210; PS 101, 110; PY 201; SO 251, 254
  - Complete one course from the following subject areas and/or courses: Anthropology, Economics, GE 135, 210, Political Science, Psychology, Sociology, Social Science
  - Complete one upper-level course from the following list or can be completed at FSU: PS 200, 201; PY 233, 234, 251; SO 260, 261, 262

Global Consciousness . . . . . 1+
- Must complete at least one course from the following list: AN 210; BA 288; EN 235. 237; FR 101, 102, 231, 232; GE 135, 210; GR 101, 102, 231, 232; HS 102, 205. 290; MU 107; PS 201, 202; SO 270; SP 101, 102, 231, 232

Race, Ethnicity, and/or Gender (REG) . . . . . 1+
- Must complete at least one course from the following list: AN 201, 210; EN 271; GE 135, 210; PS 101, 110, 200, 201, 202; PY 201, 232, 233, 234, 251; SO 251, 254, 260, 261, 262, 270

Transfer Guide information available on the following programs:
- Biotechnology-BR
- Business administration-BR
- Computer information systems-BR
- Construction management-BR
- Criminal justice-BR
- Culinary arts-BR
- Education: elementary level teacher training-GR
- Education: secondary level training-BR
- Engineering: manufacturing engineering technology-GR
- Engineering: product design technology-GR
- Engineering: quality engineering technology-GR
- Health care systems administration-GR
- Health management-GR
- Hotel management-BR
- Manufacturing engineering technology-GR
- Medical records technology-BR
- Medical technology-BR
- Music merchandising-BR
- Nursing-BR
- Optometry-BR
- Pharmacy-BR
- Plastics-BR
- Surveying engineering-BR

■ GRAND VALLEY STATE UNIVERSITY (UPDATED 12/03) www.gvsu.edu

Concurrent Enrollment Agreement: GRCC has established a concurrent enrollment agreement with Grand Valley Sate 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 Center 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.

Transfer Guide information available on the following programs:
- Advertising/Public Relations
- Anthropology
- Art and Design
- Athletic training
- Biology
- Broadcasting
- Business administration
- Chemistry
- Communications
- Computer information systems
- Computer science
- Criminal justice
- Economics
- Education: elementary level teacher training
- Education: physical education
- Education: secondary level training
- Education: social studies
- Engineering
- English
- Film and video
- Health science
- History
- International relations
- Journalism
- Liberal arts
- Mathematics
- Music
- Natural resource management
- Nursing
- Nursing/R.N. to B.S.N.
- Occupational safety and health
- Occupational therapy
- Philosophy
- Photography
- Physical therapy
- Physician assistant
- Physics
- Political science
- Pre-dental and pre-medical
- Psychology
- Public administration
- Social work
- Theater
- Therapeutic recreation

■ HISTORICALLY BLACK COLLEGES & UNIVERSITIES (HBCU) HISTORICALLY HISPANIC SERVING INSTITUTIONS (HSI)

(UPDATED 12/03)

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 or University should contact the GRCC Counseling Center in Room 327 of the Student 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 some schools. Additionally, students may visit selected colleges (HIS and HBCU) Web sites through http://www.grcc.edu/?transferschools.

■ KETTERING UNIVERSITY (UPDATED 12/03)

Transfer credit is granted for courses at Kettering University. Please visit the Counseling Center for specific transfer program information re: Applied Physics, Applied Math, Environmental Chemistry and Computer Science.

Transfer Guide information available on the following programs:
- Engineering
- Management
- Applied physics

■ LAKE SUPERIOR STATE UNIVERSITY (UPDATED 12/03) 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 MU 107, 108, 237)

Philosophy–PL 201, 202, 205, 207, 291, 292, 293, 298, 299
Theater–TH 248
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, 140, 210, 253, 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

Transfer Guide information available on the following programs:
- Computer and Mathematical science
- Fisheries and wildlife
- Geology

■ MICHIGAN STATE UNIVERSITY (UPDATED 12/03) www.msu.edu

- To be considered for admission to MSU:
  1. Math – Complete one of the following: MA 107, MA 110, MA 129, MA 131, MA 133
  2. ATL – Complete EN 100 and EN 102 OR EN 101 and EN 102
- Additional courses that can be taken at GRCC:
  Integrative Studies (IS):
  http://admissions.msu.edu/Integrative_Studies_Requirements.asp

1. Arts and Humanities (IAH) 6-8
Choose HS 249 or HS 250
Chose one course from the following: AT 105, 106, 195, 208, 270, 271; EN 233, 235, 237, 242, 246, 249, 261, 262, 270, 271, 281, 282; HS 101, 102, 201, 240, 241, 242, 249, 250, 260, 267, 290, 295; HU 240, 270, 274, 280; PL 201, 202, 205; MU 107

2. Integrative Social and Behavioral Sciences (ISS) . . . 3-4
Choose one course from the following: AN 201, 205, 210, 280; CD 120; EC 251, 252, 283; PL 209; PS 110, 200, 201, 202, 215; PY 201, 203, 231, 232, 233, 234; SO 251, 260, 270, 295; SS 120

3. Biological and Physical Sciences (ISB) and (ISP) 8
(2 Lab credits from either ISB or ISP)
Choose at least one class from the following: BI 101, 103, 104, 117, 121, 122, 152, 201, 202, 203, 204, 207, 215, 232, 289
Choose at least one class from the following: AS 102, 103; CM 101, 103, 104, 109, 113, 114, 210, 231, 236, 237, 238, 239; GL 101, 104, 105; PC 101, 111, 141, 151; PH 115, 115, 125, 126, 245, 246

- **Limited Enrollment Majors:**
  http://admissions.msu.edu/03_Transfer_Guides.asp
  In addition to the Integrative Studies requirements, students applying to transfer in any of the following majors (listed alphabetically by College) must meet specific requirements listed in the major transfer guides that follow:
  1. College of Agriculture and Natural Resources
     - Building and Construction Management
     - Packaging
  2. College of Business
     - Hospitality Business
     - Business Transfer Guide includes courses for:
       -Accounting
       -Finance
       -General Business Administration/Pre-Law
       -General Management
       -Human Resource Management
       -Marketing
       -Supply Chain Management
  3. College of Communication Arts and Sciences
     - Advertising
  4. College of Education
     - Teacher Education
  5. College of Engineering
     - Engineering (for al Engineering majors)
  6. College of Nursing
     - Nursing/Pre-Nursing
  7. School of Social Work
     - Social Work
  8. College of Veterinary Medicine
     - Veterinary Technology

- All other majors: Check the specific major in the GRCC curriculum guide supplement.

Transfer Guide information available on the following programs:
- Art
- Audiology and speech science
- Business administration
- Criminal justice
- Education: elementary level teacher training
- Education: kinesiology teacher certification
- Education: secondary level training
- Fisheries and wildlife
- Human ecology
- Medical technology
- Nursing
- Packaging
- Pre-medical
- Pre-veterinary science
- Social work

■ 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 Center 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 MTU 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.***

Transfer Guide information available on the following programs:
- Computer science
- Engineering
- Forestry

■ NORTHERN MICHIGAN UNIVERSITY (UPDATED 12/03)
www.nmu.edu

Students who are undecided about which major to pursue are encouraged to complete NMU's Liberal Studies Program requirement. The Liberal Studies Program comprises 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 101, 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).

Transfer Guide information available on the following programs:
- Art and Design
- Business administration
- Conservation
- Criminal justice
- Education: elementary level teacher training

■ SPRING ARBOR UNIVERSITY (UPDATED 12/03)
www.arbor.edu

Students must earn a grade of "C" or better for a course to transfer to Spring Arbor University. Grand Rapids Community College students who plan to transfer to Spring Arbor University will have met the general education requirements of Spring Arbor University if the student completes the MACRAO Agreement prior to transfer.

Note: There are programs at Spring Arbor University, which build upon the associate's degree. For specific information regarding these programs, or agreements between GRCC and Spring Arbor University visit the GRCC Counseling Center.

■ 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.

Transfer Guide information available on the following programs:
- Architecture
- Engineering

■ UNIVERSITY OF MICHIGAN (UPDATED 12/02)
College of Literature, Science and the Arts
www.umich.edu

The curriculum is currently under revision. Please visit the University of Michigan Web site for more details.

■ 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 at 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 fulfillment 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.

Transfer Guide information available on the following programs:
- Mortuary science
- Occupational therapy
- Physical therapy
- Social work

■ WESTERN MICHIGAN UNIVERSITY (UPDATED 12/03) 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 the student 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 current WMU Undergraduate Catalog for a detailed explanation of this program.

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

Area I: Fine Arts (3-4 hours minimum)
AT 105, 106, 270, 271; EN 233, 235, 237; HU 270, 273; 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; 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, 111; PH 101, 115, 125, 245

Area VII: Natural Science and Technology: Applications and Implications (3-4 hours minimum)
AN 201, 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, 117, 124, 127, 129, 224, 225
   g. Advanced 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 Center.

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

Foreign Language

All students who enter Western Michigan University under the Fall 1993 WMU 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.

Transfer Guide information available on the following programs:

- Art
- Business administration
- Communications
- Criminal justice
- Dietetics
- Education: elementary level teacher training
- Education: elementary/music
- Education: secondary level education
- Engineering
- Environmental studies
- Family studies
- Fashion merchandising
- Food and service administration
- Liberal education curriculum
- Music and music education
- Music major music therapy
- Occupational therapy
- Pre-dental and pre-medical
- Social work
- Textiles and apparel studies

GRCC CURRICULA

continued—

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

INDEX

COMMUNICATIONS

Arts and Communications

GRCC Educational Choices:

Associate in Arts (MACRAO Agreement)
See page 26 for requirements

Contact: Counseling Department
(616) 234-3900

COMMUNICATIONS:

Transfer Opportunities, see note below.

ENGLISH:

Transfer Opportunities, see note below.

LANGUAGES

Arts and Communications

GRCC Educational Choices:

Associate in Arts (MACRAO Agreement)
See page 26 for requirements

Contact: Counseling Department
(616) 234-4130

MODERN LANGUAGES:

Transfer Opportunities, see note below.

NEW....

SIGN LANGUAGE INTERPRETER PROGRAM:

Grand Rapids Community College has entered into a partnership with Lansing Community College to create a Sign Language Interpreting program. Students may enroll in the Sign Language Certificate program at GRCC beginning Fall, 2004. Students who successfully complete the certificate program may apply to Lansing Community College to complete the Sign Language Interpreter portion of the program. The second year coursework is offered at Lansing Community College in Lansing with internship sites available in Kent and Ottawa Counties. For curriculum and program information, contact Language and Thought Department at 234-3544.

PERFORMING ARTS

Arts and Communications

GRCC Educational Choices:

Associate in Arts (MACRAO Agreement)
See page 26 for requirements
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.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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, aural comprehension, 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 143/151	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

		Credits	Contact Hours
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**

MUSIC EDUCATION:

Transfer Opportunities, see note below.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

MUSIC MERCHANDISING: (Code 211)

Ferris State University (FSU)

Grand Rapids Community College offers an associates degree in Music Merchandising designed for students interested in music and business. While this is primarily a music degree, many of the classes will transfer directly into the Bachelor of Science in Music Industry Management degree at Ferris State University.

For more information contact:
Mr. Daniel Cronk, director
FSU Music Program

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 are private instruction and lab classes that provide the student with an in-depth examination of the principles and applications of digital audio in today's recording and interactive media industries. The private instruction allows students and recording faculty to focus on specific areas of interest to the advanced recording student.

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)

			Credits	Contact Hours
MU	101	Introduction to Music Theory 1	3	2
MU	105	Music Interpretation	1	1
MU	143/151	Applied Music Major	2	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	2/3
			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	2/3
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	3	3
EN	102	English Composition 2	(3)	3
EL	144	Basic Electricity and Electronics	3	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
			16	

Third Year

Fifth Semester (Fall)

MA	107	Intermediate Algebra	4	4
PC	141	Science of Sound	3	6
PS	110	Survey of American Government	3	3
PY	201	General Psychology	3	3
			13	

Total Credits **69**

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

The department of music at GRCC understands that many students interested in recording technology are also interested in the business aspect of managing their own recording studio or record producing. Because of this we recognize the importance for some of pursuing the Bachelor of Science in Music Industry Management degree offered at Ferris State University. While the two degrees are quite different it is the combination of skills in both music and business that could allow the student to become very marketable in the music industry. It is strongly recommended that if you are considering entering into the Ferris State University program that you contact Mr. Daniel Cronk, director of the FSU music program as soon as possible.

VISUAL ARTS

Arts and Communications

GRCC Educational Choices:

Associate of Fine Arts in Fine Arts
Associate of Fine Arts in Photography
Associate in Arts (MACRAO Agreement) with Major in Art
Associate in Arts (MACRAO Agreement) with Major in Photography

Contact: Visual Arts Department
(616) 234-3544

ARCHITECTURE:

Transfer Opportunities, see note below.

ART AND DESIGN: (Code 251)

Associate of Fine Arts in Fine Arts

Students should consult with the Visual Arts Department head.

PHOTOGRAPHY: (Code 250)

Associate of Fine Arts in Photography

Students should consult with the Visual Arts Department head.

ART AND DESIGN: (Code 201)

Suggested GRCC Program:

Associate in Arts (MACRAO) Agreement) with Major in Art

Every artist and designer must be, to some extent, a viewer, creator, communicator, theorist, and historian. For this reason, certain subject matter areas and learning processes are common to all art/design/photography majors. Undergraduate studies in art/design should prepare students to function in a variety of artistic roles.

Art Studio Major: minimum 15 credits to maximum 24 credits in visual arts required.
- 6 credits in art/design:
  - AT 130 Two Dimensional Design 1: Principles (3/6)
  - AT 140 Drawing I (3/6)
- 9 credit minimum to 18 credit maximum from:
  - a. Studio/general fine arts course listing: 2-D, 3-D, photography areas
  - b. Studio/art history course listing
  - c. Studio/graphic design course listing (3 credit from CO acceptable)

Art History: minimum of 3 credits (6 credits are recommended); concurrently completes 3 credits Humanities/MACRAO requirement. Choose from:
- AT 105 History of Art Before 1400 (3/3)
- AT 106 History of Art Since 1400 (3/3)

General Education Studies (MACRAO): minimum 28 credits required
- 1 credit Wellness (WE)
- 6 credits at English Composition (EN 100 or 101 and EN 102)
- 8 credits Humanities (Group I Distribution):
  - 3 credits required and 6 credits recommended from:
    - AT 105, AT 106, AT 271, or PO 105
- 8 credits Social Science (Group II Distribution):
  - 3 credits PS 110 required
- 8 credits Science-Mathematics (Group III Distribution)
  - one course must be a lab

Open Electives: minimum of 7 to maximum of 16 credits outside the visual arts unit.

Total Credits: 62

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

PHOTOGRAPHY: (Code 927)

Suggested GRCC Program:

Associate in Arts (MACRAO Agreement) with Major in Photography

Every artist and designer must be, to some extent, a viewer, creator, communicator, theorist, and historian. For this reason, certain subject matter areas and learning processes are common to all art/design/photography majors. Undergraduate studies in art/design should prepare students to function in a variety of artistic roles.

Photography Major: minimum 15 credits to maximum 24 credits in photography required.

15 credits required/prerequisites:
- PO 103 Introduction to Photography 1 (3/4)
- PO 104 Introduction to Photography 2 (3/4)
- PO 110 Advanced Black and White Darkroom (3/4)
- PO 210 Introduction to Color Printing (3/4)
- PO 220 View Camera: Large Format Photography (3/4)

0-9 credit choose from:
- PO 230 Photo Retouching Print Finishing (3/4)
- PO 240 Portrait Studio Techniques (3/4)
- PO 250 Illustrative Studio Techniques (3/3)

Art History: minimum of 3 credits (6 credits are recommended) (concurrently completes 3 credits of MACRAO Humanities requirements). Choose from:
- PO 105 History of Photography as Art (3/3)
- AT 105 History of Art Before 1400 (3/3)
- AT 106 History of Art Since 1400 (3/3)

General Education Studies (MACRAO): minimum 28 credits required
- 1 credit Wellness (WE)
- 6 credit English Composition (EN 100 or 101 and EN 102)
- 8 credit Humanities (Group I Distribution):
  - 3 credits PO 105 major requirement
- 8 credit Social Science (Group II Distribution):
  - 3 credits completed by PS 110 (required)
- 8 credit Science-Mathematics (Group III Distribution)
  - one course must be a lab

Open Electives: minimum of 7 to maximum of 16 credits outside the visual arts unit.

Total Credits: 62

The following sequence of classes is presented as a guide only. It is recommended that students take courses in this order.

First Year

First Semester

		Credits	Contact Hours
CM 101	Chemistry in the Modern World OR	4	6
CM 103	General Chemistry 1	(4)	7
EN 100	College Writing OR	3	4
EN 101	English Composition 1	(3)	3
PO 103	Introduction to Photography 1	3	4
PO 105	History of Photography as Art	3	3
PS 110	Survey of American Government	3	3
		16	

Second Semester

EN 102	English Composition 2	3	3
PC 151	The Science of Light, Optics, and Vision	4	6
PO 104	Introduction to Photography 2	3	4
PO 110	Advanced Black and White Darkroom	3	4
— —	Social Science Elective	3	4
		16	

Second Year

Third Semester

PO 210	Introduction to Color Printing	3	4
PO 220	View Camera: Large Format Photography	3	4
PO 230	Photo Retouching Print Finishing	3	4
PO 240	Portrait Studio Techniques	3	4
— —	Social Science Elective	3	
		15	

Fourth Semester

PO 250	Illustrative Studio Techniques	3	3
WE —	Wellness	1	2
— —	Electives *	5	
— —	Humanities Electives	6	
		15	
	Total Credits	**62**	

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

Notes:
1. Other courses not listed under the groups above may be used for electives. Consult with the GRCC Counseling Center or the Visual Arts Department Head for appropriate selection.
2. 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.
3. 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.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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

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: Business
(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

		Credits	Contact Hours
First Semester			
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
		16/17	
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	1	2
		16	

Second Year

Third Semester			
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
		15	
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
		15	
	Total Credits	**62/63**	

* Students intending to transfer should take EN 101 and EN 102 instead of BA 101 and BA 102.

** 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, see note below.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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

			Credits	Contact Hours
First Semester				
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	1	2
			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	4	
			17/18	
		Total Credits	**62/65**	

** 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.

* Students intending to transfer should take EN 101 and EN 102 instead of BA 101 and BA 102.

Transfer Opportunities, see note below.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

LANDSCAPE AND LAWN 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 turfgrass 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.

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, an Associate of Applied Arts and Sciences, and/or an Associate in Arts degree from GRCC. The program incorporates courses from MSU and GRCC, making it possible to earn the Certificate and the Associate degree simultaneously. 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 Associate of Applied Arts and Sciences or Associate 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:

Marcus Duck (517) 355-5191, ext. 351
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

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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 certificate (48 credits) *and*
- Associate in Applied Arts and Sciences (minimum of 66 credits) *and/or*
- Associate in Arts degree (minimum of 68 credits)

Curriculums available in the counseling office or at www.grcc.edu.

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
		15	

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
		16/17	

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	1	2
		14	

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	
		17	
	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.

* Students intending to transfer should take EN 101 and EN 102 instead of BA 101 and BA 102.

Transfer Opportunities, see note below.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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	
		14	
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	
		16	
	Total Credits	**30**	

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	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	

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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.

* Students intending to transfer should take EN 101 and EN 102 instead of BA 101 and BA 102.

Transfer Opportunities, see note below.

COMPUTERS

Business Management, Marketing, and Technology

GRCC Educational Choices:

Associate in Applied Arts and Sciences
Certificates

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 OR	(2)	2
CO 205	Advanced Windows		
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
		16	

continued—

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

COMPUTER APPLICATIONS - continued

Second Semester		Credits	Contact Hours
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 145	Using the Internet	3	3
		15	
	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
— —	Elective	1	2
PS 110	Survey of American Government	3	3
		15	

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 OR	2	2
CO 205	Advanced Windows	(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
		15/16	

Second Year

Third Semester

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
WE —	Wellness	1	2
SC 131	Fundamentals of Public Speaking	3	3
CO —	Computer Elective	2	2
		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	
		17	
	Total Credits	**63/64**	

Transfer Opportunities, see note below.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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

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 110	Introduction to Computer Information Systems	3	3
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	
		16	

Second Semester			
EN 102	English Composition 2* OR	3	3
BA 102	Business and Technical English 2*	(3)	3
CO 117	Introduction to Programming Using Java OR	3	3
CO 129	Introduction to C# Programming	(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
		17	

continued—

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

COMPUTER INFORMATION SYSTEMS - continued

Second Year

Third Semester

		Credits	Contact Hours
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 **	3	3
EC 252	Principles of Economics 2 (Micro)	3	3
		15	

Fourth Semester

CO 224	Systems Analysis - Electronic Data Processing	3	3
CO 227	Object Oriented Programming	3	3
EN 249	Technical Writing **	3	3
— —	Natural Science Elective (including lab)	4	7
WE —	Wellness	1	
		14	
	Total Credits	**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-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

First Semester

		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 OR	2	2
CO 205	Advanced Windows	(2)	2
CO 110	Introduction to Computer Information Systems	3	3
— —	Natural Science Elective: Intermediate Algebra (MA 107) suggested for transfer	4	
WE —	Wellness	1	2
		15	

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
		15	

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
		16	

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	
		16	
	Total Credits	**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: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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 OR	2	2
CO 205	Advanced Windows	(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	
		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
		16	

Second Year

Third Semester

		Credits	Contact Hours
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	1	2
		14	

Fourth Semester

CO 232	UNIX System Administration	2	2
CO 234	Advanced Local Area Networking OR	2	2
CO 235	Advanced LAN for Window Services	(2)	2
EN 249	Technical Writing **	3	3
PS 110	Survey of American Government	3	3
— —	Natural Science Electives (including lab)	4	
— —	Elective	1	
		15	
	Total Credits	**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, see note below.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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 for In-District residents (Kent County)
$5,400 for Out-of-District residents

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 Information: ***Occupational Training***
(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	3	3
	AND		
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

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

College Course		Credits	Contact Hours
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
At least 9 credits in computer applications chosen from:			
CO 101	Introduction to Computer Applications	2	2
CO 105	Windows Operating System OR	2	2
CO 205	Advanced Windows	(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**	

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		Credits	Contact 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*	(3)	3
	AND		
BA 102	Business and Technical English 2* OR	3	3
EN 102	English Composition 2*	(3)	3

* EN courses are required for the Associate in Arts degree and for transfer students.

PS 110 Survey of American Government is a required course.

Twenty-two credit hours from the following core:			
BA 207	Business Law 1	3	3
CO 101	Introduction to Computer Applications	2	2
CO 105	Windows Operating System	2	2
CO 205	Advanced Windows	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

continued—

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

MULTIMEDIA COMMUNICATION TECHNOLOGIES - continued

College Course		Credits	Contact Hours
Commercial Imaging:			
AT 140	Drawing 1	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	

SUGGESTED SEQUENCES:

SPECIAL DEGREE TRACKS—

- **Commercial Writing**
- **Commercial Imaging**
- **Video and Multimedia**

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 OR	2	2
CO 205	Advanced Windows	(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	
		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
WE —	Wellness	1	2
— —	Social Science Elective	3	3
		14	

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	3	3
BA 201	Business Communications	(3)	3
— —	Social Science Elective	3	3
		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
		17	
	Total Credits	**63**	

* 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: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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 OR	2	2
CO 205	Advanced Windows	(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	
		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
AT 130	Two Dimensional Design 1	3	6
WE —	Wellness	1	2
— —	Social Science Elective	3	3
		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	3
PS 110	Survey of American Government	3	3
		17	

Fourth Semester

BA 174	Advertising OR	3	3
AT 261	Graphic Design 2	(3)	4
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	
		16	
	Total Credits	**67**	

* 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 OR	2	2
CO 205	Advanced Windows	(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	
		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	2
		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	
		16	

Fourth Semester

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	
		16	
	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.

Transfer Opportunities, see note below.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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.

College Course		Credits	Contact Hours
All of the following courses:			
CO 105	Windows Operating System OR	2	2
CO 205	Advanced Windows	(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 145	Using the Internet	3	3
CO 171	Database Design and Development	3	3
	Total Credits	**33**	

Business Management, Marketing, and Technology

GRCC Educational Choices:

Certificate
Associate in Applied Arts and Sciences
Associate in Arts

Contact: Computer Applications Department
(616) 234-3670

INTERNET DEVELOPMENT

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
- Apply creative design principles to develop efficient, marketable Web sites

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

The technical focus prepares students for jobs on the server side of the Web such as:

- Structure and system administration
- Programming
- Database connectivity
- 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, Computer Science, Business, or Applications Development.

At the completion of this program, students will qualify for memberships or certifications by organizations such as the Association of Internet Professionals, World Organization of Webmasters, or the Certified Webmaster Professional Program.

Please note that the following courses have prerequisites, in the form of courses or experience, which are not part of this degree program: CO 120, CO 132, CO 170, CO 117, and CO 230.

Suggested Course Sequence:

It is recommended that students have prior knowledge of Windows, Windows-based applications, and an Internet browser. If needed, students can gain this expertise with the following courses: CO 101 Introduction to Computer Applications or CO 105 Windows Operating System.

WEB DESIGN/DEVELOPMENT: (Code 160)

Suggested GRCC Program:

Associate in Applied Arts and Sciences
Associate in Arts

First Semester		Credits	Contact Hours
CO 120	Using Graphics Software	2	2
CO 110	Introduction to Computer Information Systems	3	3
EN 100	College Writing OR	3	3
EN 101	English Composition 1 OR	(3)	3
BA 101	Business and Technical English 1	(3)	3
PS 110	Survey of American Government	3	3
CO 230	Introduction to Telecommunications	2	2
AR 111	Orientation to Architecture OR	2	2
—	Humanities	(2)	
		15	

Second Semester		Credits	Contact Hours
BA 103	Introduction to Business	4	4
CO 122	Computerized Illustration	2	2
EN 102	English Composition 2 OR	3	3
BA 102	Business and Technical English 2	(3)	3
SC 131	Fundamentals of Public Speaking	3	3
CO 145	Using the Internet	3	3
WE —	Wellness	1	2
		16	

Third Semester			
CO 146	Web Design Fundamentals	3	3
CO 132	UNIX Operating System	2	2
CO 150	Introductory Computer Animation	2	2
CO 168	Introduction to Internet Animation	2	2
EC 251	Principles of Economics 1	3	3
MA 107	Intermediate Algebra	4	4
		16	

Fourth Semester			
PO 252	Introduction to Television Production	3	4
CO 241	Web Databases	3	3
EN 249	Technical Writing	3	3
EC 252	Principles of Economics 2	3	3
PC 101	General Physical Science OR	4	6
—	Lab Science	(4)	
		16	

Total Credits **63**

WEB TECHNICAL SUPPORT: (Code 161)

Suggested GRCC Program:

Associate in Applied Arts and Sciences
Associate in Arts

First Semester		Credits	Contact Hours
BA 103	Introduction to Business	4	4
CO 110	Introduction to Computer Information Systems	3	3
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 145	Using the Internet	3	3
PS 110	Survey of American Government	3	3
		16	

continued—

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

WEB TECHNICAL SUPPORT - continued

Second Semester		Credits	Contact Hours
CO 146	Web Design Fundamentals	3	3
CO 230	Introduction to Telecommunications	2	2
CO 132	UNIX Operating System	2	2
EN 102	English Composition 2 OR	3	3
BA 102	Business and Technical English 2	(3)	3
SC 131	Fundamentals of Public Speaking	3	3
EC 251	Principles of Economics 1	3	3
		16	

Third Semester			
CO 117	Introduction to Programming Using JAVA	3	3
CO 247	Internet Scripting	3	3
CO 170	Introduction to Database Software	2	2
MA 107	Intermediate Algebra	4	4
EN 249	Technical Writing	3	3
		15	

Fourth Semester			
CO 241	Web Databases	3	3
CO 246	Web Server Administration/Security	3	3
EC 252	Principles of Economics 2	3	3
PC 101	General Physical Science OR	4	6
	Lab Science	(4)	
AR 111	Orientation to Architecture OR	2	2
—	Humanities	(2)	
WE —	Wellness	1	2
		16	
	Total Credits	**63**	

INTERNET PROFESSIONAL

This one-year program provides 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's 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.

WEB DESIGN/DEVELOPMENT: (Code 162)

Suggested GRCC Program: Certificate

First Semester		Credits	Contact Hours
CO 120	Using Graphics Software	2	2
CO 110	Introduction to Computer Information Systems	3	3
CO 140	Multimedia Presentations	2	2
CO 122	Computerized Illustration	2	2
CO 145	Using the Internet	3	3
BA 103	Introduction to Business	4	4
		16	

Second Semester			
CO 230	Introduction to Telecommunications	2	2
CO 146	Web Design Fundamentals	3	3
CO 132	UNIX Operating Systems	2	2
CO 150	Introductory Computer Animation	2	2
CO 168	Introduction to Internet Animation	2	2
PO 252	Introduction to Television Production	3	3
CO 241	Web Databases	3	3
		17	
	Total Credits	**33**	

WEB TECHNICAL SUPPORT: (Code 163)

Suggested GRCC Program: Certificate

First Semester		Credits	Contact Hours
CO 110	Introduction to Computer Information Systems	3	3
CO 145	Using the Internet	3	3
CO 146	Web Design Fundamentals	3	3
CO 230	Introduction to Telecommunications	2	2
CO 132	UNIX Operating System	2	2
BA 103	Introduction to Business	4	4
		17	

Second Semester			
CO 117	Introduction to Programming Using JAVA	3	3
CO 247	Internet Scripting	3	3
CO 170	Introduction to Database Software	2	2
CO 241	Web Databases	3	3
CO 246	Web Server Administration/Security	3	3
		14	
	Total Credits	**31**	

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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	(4)	4
BA 156	Accounting Fundamentals (degree seeking)	(3)	3
— —	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 Exploration* 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 Exploration is a one-week field experience in New York City (FM 289) or Chicago (FM 290). A suitable elective may be substituted.

* Students intending to transfer should take EN 101 and EN 102 instead of BA 101 and BA 102.

Transfer Opportunities, see note below.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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)	(4)	4
BA 156	Accounting Fundamentals (degree seeking)	3	3
WE —	Wellness	1	2
		13/14	

Second Semester		Credits	Contact Hours
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 Exploration* OR IF 290	1	1
— —	Elective	1	2
		17	

Second Year

Third Semester

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
		17	

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 Exploration* OR IF 289	1	1
PS 110	Survey of American Government	3	3
IF/FM	Elective	2	
		15	

Total Credits 62/63

* Interior Decorating and Design Exploration is a one-week field experience in New York City (IF 289) or Chicago (IF 290). A suitable elective may be substituted.

* Students intending to transfer should take EN 101 and EN 102 instead of BA 101 and BA 102.

TEXTILES AND APPAREL STUDIES:

Transfer Opportunities, see note below.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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

		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 103	Introduction to Business	4	4
		16	

Second Semester

		Credits	Contact Hours
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	2
BA 150	Business Mathematics OR	(4)	
BA 153	Personal Finance	3	
		14/15	

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 —	Business Administration Elective	4	
PS 110	Survey of American Government	3	3
		15	

Fourth Semester

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	
		17	
	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) 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: (Code117)

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.

continued—

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

OFFICE ASSISTANT STUDIES - continued

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
		15	
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
		17	
	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	
		15	
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
		17/18	

Second Year

Third Semester			
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	
		15	
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	
		15	
	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.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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
		16	
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
		17	
	Total Credits	**33**	

LEGAL STUDIES:

Transfer Opportunities, see note below.

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
		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
		16	
Summer Semester			
BA 145	Computer Applications in Business 1	4	4
	Total Credits	**35**	

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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

First Semester

		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
		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	
		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
		16	

Fourth Semester

		Credits	Contact Hours
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
		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, see note below.

MEDICAL RECORDS TECHNOLOGY:

Transfer Opportunities, see note below.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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
		17	

Second Semester		Credits	Contact Hours
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
		18	
	Total Credits	**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.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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
		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
		18	

Second Year

Third Semester

BA 101	Business and Technical English* 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
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	3	
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	3	3
— —	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, see note below.

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 instruction, course of study, facilities and equipment of this institution have been evaluated by the National Automotive Technicians Education Foundation and meet the National Institute for Automotive Service Excellence standards of quality for the training of automobile technicians in the following areas: Automatic Transmission and Transaxle,Brakes, Electrical Electronic Systems, Engine Performance, Engine Repair, Heating and Air Conditioning, Manual Drive Train and Axles, Suspension and Steering.

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—

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

AUTOMOTIVE SERVICING - continued

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
		8	
First Semester– Second 7.5 weeks			
MN 116	Welding *(continued)*		
TR 103	Auto Engine Design and Service	4	6
TR 148	Steering, Suspension, and Alignment	2	4
TR 210	Auto Ignition Systems	2	4
		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
		10	
Second Semester– Second 7.5 weeks			
TE 103	Technical Mathematics *(continued)*		
TR 143	Automotive Air Conditioning and Heating	2	4
TR 160	Automotive Driveability	2	4
TR 240	Automatic Transmissions	2	4
		6	
Interim Session (3 Weeks)			
TR 180	Applied Auto Servicing	4	8
		4	
	Total Credits	**36**	

Attention: GRCC now grants college credits for current Automotive Service Excellence (ASE) certifications. For details contact the department at 616-234-3670 or the college Web site at www.grcc.edu

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 instruction, course of study, facilities and equipment of this institution have been evaluated by the National Automotive Technicians Education Foundation and meet the National Institute for Automotive Service Excellence standards of quality for the training of automobile technicians in the following areas: Automatic Transmission and Transaxle, Brakes, Electrical Electronic Systems, Engine Performance, Engine Repair, Heating and Air Conditioning, Manual Drive Train and Axles, Suspension and Steering.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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
		8	

First Semester– Second 7.5 weeks

MN 116	Welding *(continued)*		
TR 103	Auto Engine and Design Service	4	6
TR 148	Steering, Suspension, and Alignment	2	4
TR 210	Auto Ignition Systems	2	4
		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
		10	

Second Semester– Second 7.5 weeks

TE 103	Technical Mathematics *(continued)*		
TR 143	Automotive Air Conditioning and Heating	2	4
TR 160	Automotive Driveability	2	4
TR 240	Automatic Transmissions	2	4
		6	

Interim Session (3 Weeks)

TR 180	Applied Auto Servicing	4	8
		4	

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 144	Basic Electricity and Electronics	3	6
PS 110	Survey of American Government	3	3
TE 114	Material Science**	4	5
		13	

Fourth Semester

		Credits	Contact Hours
BA 102	Business and Technical English 2 OR	3	3
EN 102	English Composition 2 **	(3)	3
TR 260	Advanced Power Trains	4	6
WE —	Wellness	1	2
— —	Humanities Elective	3	
		11	

Interim Session (3 Weeks)

TR 280	Advanced Auto Servicing	4	8
		4	

Total Credits **64**

** 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.

Attention: GRCC now grants college credits for current Automotive Service Excellence (ASE) certifications. For details contact the department at 616-234-3670 or the college Web site at www.grcc.edu

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 for In-District residents (Kent County)
$5,400 for Out-of-District residents

continued—

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

AUTOMOTIVE TECHNICIAN - continued

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 Information: ***Occupational Training (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
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
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 #	(3)	3
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.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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).

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
PH 115	Technical Physics #	4	6
		15	

continued—

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

ELECTRONICS TECHNOLOGY - continued

Second Year

Third 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
EL 203	Applied Measurements (8 weeks)	3	6
EL 205	Transistor Electronics (8 weeks)	3	6
— —	Technical Elective *** #	4	6
— —	Humanities Elective	3	
		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
		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, see note below.

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.

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's degree program. Classes in this program are available in Grand Rapids and in Holland.

		Credits	Contact Hours
TE 103	Technical Mathematics OR	4	4
EL 132	Electronics Mathematics	(5)	(5)
AP 114	Machine Trades Blueprint Reading	2	2.25
MN 119	Machine Operations	4	8
MN 116	Introductory Welding	2	4
EL 144	Basic Electricity and Electronics	3	6
EL 201	Industrial Electricity	3	6
MN 217	Hydraulics	3	6
MN 218	Pneumatics	3	4
—	Electives*	6	
	Total Credits	**30/31**	

* Electives may be selected from the following departments: AP, AR, DR, EL, ER, EG, MN, TE, TI, TR.

Suggested Electives		Credits	Contact Hours
AP 113	Mechanical Power Transmissions	2	2.25
AP 214	Advanced Machine Trades Blueprint Reading	2	2.25
EL 162	Control Systems	2	3
EL 163	Electrical Troubleshooting	2	2
EL 164	Programmable Logic Controllers	2	3
MN 136	Basic Arc Welding	4	4
MN 137	Fundamentals of TIG and MIG Welding	4	8
TE 104	Advanced Technical Mathematics	3	3

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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

		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
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

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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 or Facility 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 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.

		Credit Hours	Contact Hours
First Semester			
AR 105	Construction Materials 1	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	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*	(3)	(3)
— —	Elective	1	
		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* 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 (using CAD) OR	4	4
AR 208	Design Studio – Commercial Building Design	(4)	(4)
AR 112	Mechanical and Electrical Drafting (using CAD)	3	4
PH 115	Technical Physics OR	4	6
PH 125	College Physics 1	(4)	(7)
SC 131	Fundamentals of Public Speaking	3	3
PS 110	Survey of American Government	3	3
		17	
Total Credits		**62**	

* Students intending to transfer to four year colleges with an Associates in Arts degree:
- Must take EN instead of BA courses
- Recommended to take MA instead of TE courses
- Need 5 more credits in Humanities
- Need 5 more credits in Social Sciences

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

CONSTRUCTION MANAGEMENT:

Transfer Opportunities, see note below.

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 for In-District residents (Kent County)
$5,400 for Out-of-District residents

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 Information: ***Occupational Training***
(616) 234-3800
www.grcc.edu
E-mail: training@grcc.edu

COMPUTER AIDED ENGINEERING/MECHANICAL DESIGN: (Code 928)

(FORMERLY: MECHANICAL DRAFTING/CAD)

Suggested GRCC Program: Certificate

This program provides students with one year of training so they can assume positions as beginning detail designers 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 Computer Aided Engineering/Mechanical Design.

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.

		Credit Hours	Contact Hours
First Semester			
EG 110	Industrial Graphics with CAD	3	6
DR 150	Introduction to Solidworks	3	4
MN 199	Theory of Machine Shop	3	4
DR 180	Introduction to Mechanical Concepts	3	4
TE 103	Technical Mathematics OR	4	4
MA 107	Intermediate Algebra OR	(4)	(4)
MA 110	College Algebra **	(4)	(4)
		16	
Second Semester			
DR 212	Tool Design	2	4
DR 224	Die Design	2	4
DR 258	Introduction to Pro-Engineering	4	4
EG 121	Descriptive Geometry (Revised w/CAD)	2	4
EG 201	Advanced Engineering Graphics	4	4
TE 104	Advanced Technical Mathematics OR	3	3
MA 108	Trigonometry	(2)	(2)
		14/17	
	Total Credits	**30/33**	

** If taking MA 110, only one math course is required.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

COMPUTER AIDED ENGINEERING/MECHANICAL DESIGN: (Code 904)

(FORMERLY: MECHANICAL DRAFTING/CAD TECHNOLOGY)

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 designers.

Designers prepare detailed drawings based on rough sketches, specifications and calculations made by scientists, engineers and designers. Designers 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 Computer Aided Engineering /Mechanical Design Program.

The College has incorporated into the Computer Aided Engineering /Mechanical Design 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 Computer Aided Engineering /Mechanical Design Program are secure in such careers as mechanical drafting, CAD operation; tool, die, mold, machine and product design; and high school and college teaching.

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		Credit Hours	Contact Hours
EG 110	Industrial Graphics with CAD	3	6
DR 150	Introduction to Solidworks	3	4
MN 199	Theory of Machine Shop	3	4
DR 180	Introduction to Mechanical Concepts	3	4
TE 103	Technical Mathematics OR	4	4
MA 107	Intermediate Algebra OR	(4)	(4)
MA 110	College Algebra **	(4)	(4)
		16	

Second Semester			
DR 212	Tool Design	2	4
DR 224	Die Design	2	4
DR 258	Introduction to Pro-Engineering	4	4
EG 121	Descriptive Geometry (Revised w/ CAD)	2	4
EG 201	Advanced Engineering Graphics	4	4
TE 104	Advanced Technical Mathematics OR	3	3
MA 108	Trigonometry	(2)	(2)
WE —	Wellness	1	2
		17/18	

Second Year

Third Semester			
BA 101	Business and Technical English * OR	3	3
EN 100	College Writing* OR	(3)	(4)
EN 101	English Composition*	(3)	(3)
DR 229	Detail Drafting	3	4
DR 265	Introduction to Designing w/ Surfaces	3	4
— —	Drafting/CAD Specialization		
— —	Electives	2(4)	2(4)
TE 114	Material Science OR	4	5
PH 115	Technical Physics OR	(4)	(6)
MN 217	Hydraulics	(3)	(6)
		14/17	

Fourth Semester			
BA 102	Business and Technical English* OR	3	3
EN 102	English Composition 2*	(3)	3
DR 279	Team Design Project	4	6
— —	Humanities	3	3
— —	Drafting/CAD Specialization		
— —	Electives	2(4)	2(4)
PS 110	Survey of American Government	3	3
		15/17	
	Total Credits	**62/68**	

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

* Students intending to transfer to four year colleges with an Associates in Arts degree:
  - Must take EN instead of BA courses
  - Recommended to take MA instead of TE courses
  - Need 5 more credits in Humanities
  - Need 5 more credits in Social Sciences
  - Need PH 115 instead of TE 114 or MN 217

** If taking MA 110, only one math course is required.

Drafting/CAD Specialization Electives

(Please note if the student has insufficient credits to graduate after completing the required courses, they should take additional Drafting/CAD Specialization Electives)

DR 225	Advanced Die Design	2
DR 241	Mold Design & Theory	3
DR 250	Mechanical Desktop	3
DR 259	Advanced Part Design and Sheet Metal Design	4
DR 260	Introduction to Catia	3
MN 220	Basic Plastic Processing	3
TE 282	Cooperative Education in Technology	3

Transfer Opportunities, see note below.

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 for In-District residents (Kent County)
$5,400 for Out-of-District residents

Course Outline:

- CAD Skills
- Blueprint Reading and Sketching
- Technical Mathematics
- Computer Hardware
- Computer Software including CAD Applications
- Teamwork and Communication Skills

Contact Information: ***Occupational Training***
(616) 234-3800
www.grcc.edu
E-mail: training@grcc.edu

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.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, see note below.

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
DR 241	Mold Design and Theory	3	4
— —	Elective *	4	
		14	
	Total Credits	**32**	

* Students must take one of the following three electives:

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.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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
EN 101	English Composition 1	3	3
		16	

Second Semester

EL 144	Basic Electricity and Electronics	3	6
MN 165	Plastics Testing	4	4
MN 223	Injection Molding Theory	3	3
MN 242	Applied Injection Molding	4	6
SC 131	Fundamentals of Public Speaking	3	3
		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
		16	

Fourth Semester

EN 102	English Composition 2	3	3
MN 246	Injection Molding Machine Maintenance	3	4
— —	Elective	1	
PS 110	Survey of American Government	3	3
MN 217	Hydraulics	3	6
		13	
	Total Credits	**62**	

* These classes may not transfer into FSU's Bachelor of Science in Plastics Engineering Technology degree program.

* Some colleges require EN 101 and EN 102 for bachelor's degree.

Transfer Opportunities, see note below.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.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
EN 100	College Writing OR	(3)	4
EN 101	English Composition 1	(3)	3
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 *	(4)	4
		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
		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
EN 100	College Writing* OR	(3)	4
EN 101	English Composition 1*	(3)	3
BA 183	Supervision	3	3
CO —	Computer Elective	2	2
TE 103	Technical Mathematics OR	4	4
MA 107	Intermediate Algebra*	(4)	4
MN 248	Quality Assurance	3	3
		17	

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

Second Semester

		Credits	Contact Hours
BA 102	Business and Technical English 2* OR	3	3
EN 102	English Composition 2*	(3)	3
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
		14/15	

Second Year

Third Semester

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	(3)	3
— —	General Electives	4	
		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	2
PH 115	Applied Physics OR	4	6
TE 114	Material Science OR	(4)	6
PH 125	College Physics 1	(4)	(7)
TE 282	Cooperative Education in Technology 1	3	3
		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; and SC 131 instead of SC 135.

Transfer Opportunities, see note below.

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
		14	

Second Semester

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	4	4
MA 107	Intermediate Algebra	(4)	4
TE 104	Advanced Technical Mathematics OR	3	3
MA 108	Trigonometry	(2)	
		16/17	
	Total Credits	**30/31**	

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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	4	4
MA 107	Algebra	(4)	4
TE 104	Advanced Technical Mathematics OR	3	3
MA 108	Trigonometry	(2)	
		13/14	

Second Semester			
BA 101	Business and Technical English* OR	3	3
EN 100	College Writing* OR	(3)	4
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	4	6
TE 114	Material Science	(4)	5
— —	Career Track Elective	4	+6
		18	

Second Year

Third Semester			
BA 102	Business and Technical English* OR	3	3
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
		15	

Fourth Semester			
PS 110	Survey of American Government	3	3
SC 131	Fundamentals of Public Speaking OR	3	3
SC 135	Interpersonal Communication	(3)	3
— —	Career Track Electives	10	15
		16	

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.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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 for In-District residents (Kent County)
$5,400 for Out-of-District residents

continued—

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

MACHINIST/CNC TECHNICIAN - continued

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 Information: ***Occupational Training***
(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
		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
		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

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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
		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
		14	

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 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
		16	

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	
		17	
	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 for In-District residents (Kent County)
$5,400 for Out-of-District residents

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 Information: ***Occupational Training (616) 234-3800 www.grcc.edu E-mail: training@grcc.edu***

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.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
- 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, see note below.

MATHEMATICS:

Transfer Opportunities, see note below.

PACKAGING:

Transfer Opportunities, see note below.

PHYSICS:

Transfer Opportunities, see note below.

SURVEYING:

Transfer Opportunities, see note below.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.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
- Licensed Practical Nurse
- Dentist
- Chiropractor
- Rehabilitation Therapist
- Recreational Therapist
- Dental Assistant/Hygienist
- Physical Therapy Assistant
- X-ray Technician
- Emergency Medical Technician

INDEX

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
- Practical Nursing
- Dental Assisting
- Dental Hygiene
- Occupational Therapy Assistant
- 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. Previous felonies and/or misdemeanors may prevent students from participating in clinical instruction and from completing a health program.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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 high school 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 (3.5 weeks)	2	2	8	0	0
WE 156 First Aid **	1	2	2	0	0
	19				

continued—

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

DENTAL ASSISTING - continued

** 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	Credits	Meeting Time			
		CH*	Lec	Lab	Clinic
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	0
DX 126 Dental Radiography (theory and lab first 7 weeks, clinic last 7 weeks)	4	6	4	4	4
	20				
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
	9				
Total Credits	**48**				

* CH = Contact hours: The number of class hours of attendance required per week.

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		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
BA 102	Business and Technical English 2 OR		
EN 102	English Composition 2***	3	3
PS 110	Survey of American Government	3	3
PY 201	General Psychology	3	3
— —	Humanities Elective	3	3
SC 135	Interpersonal Communication	3	3
SO 251	Principles of Sociology	3	3
		21	
Total Credits for AAAS 69			

*** 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.

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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" 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	4	5	3	2	0
BI 127† General Microbiology	4	7	3	4	0
EN 100 College Writing** OR	3				
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
	17				
Second Semester					
BI 122† Human Anatomy and Physiology 2	4	5	3	2	0
CM 210† 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
	15				

First Year (Program Entry)

Third Semester (Fall)	Credits	Meeting Time			
		CH*	Lec	Lab	Clinic
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
	18				
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
	16				
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
	8				

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
	18				

continued—

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

DENTAL HYGIENE - continued

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 Arr
DH 275 Dental Ethics and Jurisprudence	1	1	1	0	0
DH 276 Dental Hygiene Professional Seminar	1	1	1	0	0
PS 110 Survey of American Government **	3	3	3	0	0
	15				

Total Dental Credits 76
Total Non-Dental Credits 31

† 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. According to Public statute, previous felonies or misdemeanors for substance abuse, physical abuse, and/or criminal sexual conduct are likely to prevent an applicant from completing the program, 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 117, 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.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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) with current unencumbered licenses 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**	4	5	3/2
EN 100	College Writing or	3	4	
BA 101	Business and Technical English OR	3	3	
EN 101	English Composition 1 **	3		3
GH 120	Therapeutic Relationships **	3		3
PY 201	General Psychology **	3		3
WE 165	Dynamics of Fitness OR any Wellness course	1	2	2
		19		

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 **	4	5	3/2
PY 232	Developmental Psychology **	3		3
		17		

Summer Session				
BI 127	General Microbiology* **	4	7	
		4		

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	
		17		

Fourth Semester		Credits	Contact Hours	MT*
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
		13		
	Total Credits	**70**		

* 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 126.

*** BI 127 is required by most BSN programs

Beginning Fall 2004: Associate in Nursing

Pre Nursing Semester		Credits	Contact Hours	MT*
AD 100*	Perspectives In Nursing (7 weeks)	1	1	2/0
BI 121*	Human Anatomy and Physiology 1	4	5	2/3
PY 201**	General Psychology	3	3	3/0
EN 101**	English Composition 1	1	3	3/0
SO —**	Any Sociology except S0295, 298, 299	3	3	3/0
WE 165**	Dynamics of Fitness or Any Wellness	1	2	2/0
		15		

1st Semester				
BI 122**	Human Anatomy and Physiology 2	4	5	2/3
AD 125	Medical Surgical Nursing 1 (7 weeks)	3	5	4/6
AD 130	Psychosocial Nursing Foundations (7 weeks)	3	5	4/6
AD 150	Medical Surgical Nursing 2 (7 weeks)	3	5	4/6
AD 148	Community/Transcultural Nursing 1	1	1	1/0
		14		

continued—

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

ASSOCIATE DEGREE NURSING - continued

2nd Semester		Credits	Contact Hours	MT*
BI 126**	Microbiology and Infection Diseases 2 OR	2	3	3/-
BI 127	General Microbiology	4	7	3/4
AD 155	Medical Surgical Nursing 3 (7 weeks)	4	7	5/9
AD 175	Medical Surgical Nursing 4 (7 weeks)	4	7	5/9
AD 158	Community/Transcultural Nursing 2	1	2	.5/1.5
		11		
3rd Semester				
PY 232**	Developmental Psychology	3	3	3/0
EN 102**	English Composition 2	3	3	3/0
AD 230	Mental Health Nursing (7 weeks)	4	7	5/9
AD 232	Obstetrical Nursing (7 weeks)	4	7	5/9
AD 248	Community/Transcultural Nursing 3	1	2	.5/1.5
		15		
4th Semester				
PS 110**	American Government	3	3	3/0
AD 243	Pediatric Nursing (7 weeks)	4	7	5/9
AD 245	Medical Surgical Nursing 5 (7 weeks)	6	10	8/12
AD 258	Community/Transcultural Nursing 4	1	2	.5/1.5*
		14		
5th Semester				
AD 250	Management of Nursing Care (7 weeks)	3	7	2/12
	Total Credits	**72**		

Note: Classes meet for 60 minutes/hour, break time is additional

* 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.

* Courses are prerequisite to AD125-a grade of C- or higher is required

** Courses may be taken prior to formal admission

** The minimum acceptable grade for BI 122 and BI 127 will be a C-.

NURSING:

Transfer Opportunities, see note below.

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. According to Public statute previous felonies or misdemeanors for substance abuse, physical abuse, and/or criminal sexual conduct are likely to prevent an applicant from completing the program and taking the licensure exam NCLEX-PN 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 high school GPA of at least 2.0.
3. Score at least 80% on the GRCC mathematics assessment test.
4. Score at least at the 10th grade level on the GRCC English reading comprehension test.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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.

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.

		Credits	Contact Hours	MT*
Winter Semester				
GH 125	Introduction to the Structure and Functions of the Human Body (1st 11 weeks) **	3	3	4
GH 126	Microbiology for Health Care (last 3 weeks) **	1	1	4
WE 156	First Aid**	1	2	2
PN 115	Introduction to Practical Nursing (1st 7 weeks)	3	3	6
PN 117	Health and Wellness (1st 7 weeks)	4	4	8
PN 119	Direct Care 1 (2nd 7 weeks)	8	10.25	11.5/9
		20		
Summer Session (Required)				
PN 132	Direct Care 2 (1st 7 weeks)	7	10.5	8/13
PN 135	Family Nursing (2nd 7 weeks)	7	10.5	8/13
		14		
Fall Semester				
PN 141	Direct Care 3 (1st 7 weeks)	7	10.5	7.5/15
PN 143	Role Adjustment (4 weeks)	5	7.5	8.5/22
		12		
	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

continued—

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

OCCUPATIONAL THERAPY ASSISTANT - continued

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 a least a "C".

In order to be eligible for graduation, OTA student must earn a minimum of "C" (2.0) in each of the required OTA courses and a minimum cumulative GPA of "C" in the prescribed OTA curriculum. The student must earn a minimum of "C-" (1.8) in BI 121 and BI122 effective April 1, 2004.

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

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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.

There are several professional-level education programs directed toward providing specific career advancement for certified occupational therapy assistants. To become a registered occupational therapist a baccalaureate degree is required. Educational programs will offer this degree prior to 2007 when a postbaccalaureate degree will be required. 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.

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

	Credits	Meeting Time			
First Semester		CH*	Lec	Lab	Clinic
BI 121 Human Anatomy and Physiology 1**	4	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	1	0	0
OT 108 Therapeutic Interventions 1	3	5	2	3	0
PY 201 General Psychology **	3	3	3	0	0
	21				
Second Semester					
BI 122 Human Anatomy and Physiology 2 **	4	5	3	2	0
CD 120 Human Growth and Development 2 **	3	3	3	0	0
EN 100 College Writing** OR	3				
EN 101 English Composition 1**	(3)	3	3	0	0
OT 109 Therapeutic Interventions 2	3	5	2	3	0
OT 110 Disabling Conditions	4	4	4	0	0
PY 231 Abnormal Psychology **	3	3	3	0	0
	20				

	Credits	Meeting Time			
Summer Session (Required)		CH*	Lec	Lab	Clinic
PS 110 Survey of American Government **	3	3	3	0	0
WE 156 First Aid ***	1	2	2	0	0
	4				

Second Year

Third Semester					
EN 102 English Composition 2 **	3	3	3	0	0
OT 208 Therapeutic Interventions 3	3	5	2	3	0
OT 214 Kinesiology in Occupational Therapy	3	3	3	0	0
OT 220 Fieldwork 1	1	3	0	0	15
OT 224 Fieldwork Seminar 1	1	1	1	0	0
SP 141 Spanish for Healthcare Professionals	3	3	3		
	14				
Fourth Semester					
OT 230 Fieldwork 2 (16 weeks) ***	10	10	0	0	40
OT 235 Fieldwork Seminar 2	2	2	2	0	0
	12				
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.

**** WE 156 is not required if a student can document current CPR/BLS for the Professional Rescuer certification prior to the third semester. However one WE course is required to graduate from GRCC.

OCCUPATIONAL THERAPY:

Transfer Opportunities, see note below.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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.
2. **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.**
3. 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.
4. 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.
5. 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.
6. 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).
7. 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:

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 biology and algebra 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.
6. Students with felony convictions may be prevented from taking the national registry examination. This may impact employment options following completion of the RT program.
7. Earn a grade of C- or higher in BI 121 and BI 122 (Effective April 1, 2004).

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

In addition to tuition, fees and books, there are also costs for uniforms, etc. Estimates of additional costs may be obtained from the RT Program office.

In order to be eligible for graduation, Radiologic Technology students must:

1. Earn a minimum cumulative GPA of 2.0 in the prescribed Radiologic Technology curriculum.
2. Earn a grade of "C-" or higher in BI121 and BI 122 (Effective September 1, 2004).

First Year

		Credits	Meeting Times*			
First Semester			CH*	Lec	Lab	Clinic
BI 121	Human Anatomy and Physiology 1 **	4	5	3	2	0
CO 101	Introduction to Computer Applications **	2	2	2	0	0
GH 110	Medical Terminology 1**	2		2	0	0
WE —	Wellness **	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
		18				
Second Semester						
BI 122	Human Anatomy and Physiology 2 **	4	5	3	2	0
BA 101	Business and Technical English 1** OR	3	3			
EN 100	College Writing ** OR	(3)	4			
EN 101	English Composition 1 **	(3)	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
		17				
Summer Session I (Required)						
RT 131	Clinical Practicum in Radiologic Technology 2	4	4	0	0	40

Second Year

		Credits	Meeting Times*			
Third Semester			CH*	Lec	Lab	Clinic
BA 102	Business and Technical English 2** OR	3	3			
EN 102	English Composition 2 **	(3)	3	0	0	0
PS 110	Survey of American Government **	3	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
		17				
Fourth Semester						
PY 201	General Psychology **	3	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	5	3	2	0
RT 231	Clinical Practicum in Radiologic Technology 4	3	3	0	0	24
		16				
Summer Session II (Required)						
RT 232	Clinical Practicum in Radiologic Technology 5	4	4	0	0	40

Total Credits 76

* 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

HEALTH SCIENCES

GRCC Educational Choices:

Associate in Arts (MACRAO Agreement)

Contact: Counseling Department
(616) 234-4130

MEDICAL TECHNOLOGY:

Transfer Opportunities, see note below.

PHYSICAL THERAPY:

Transfer Opportunities, see note below.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

PHYSICIAN ASSISTANT:

Transfer Opportunities, see note below.

PRE-DENTAL:

Transfer Opportunities, see note below.

PRE-LAW:

Transfer Opportunities, see note below.

PRE-MEDICAL:

Transfer Opportunities, see note below.

PRE-OPTOMETRY:

Transfer Opportunities, see note below.

PRE-PHARMACY:

Transfer Opportunities, see note below.

PRE-VETERINARY:

Transfer Opportunities, see note below.

OCCUPATIONAL SAFETY AND HEALTH:

Transfer Opportunities, see note below.

PUBLIC HEALTH:

Transfer Opportunities, see note below.

WELLNESS

Health Sciences

GRCC Educational Choices:

Associate in Arts (MACRAO Agreement)

Contact: Counseling Department
(616) 234-4130

ATHLETIC TRAINING:

Transfer Opportunities, see note below.

SPORTS MEDICINE:

Transfer Opportunities, see note below.

THERAPEUTIC RECREATION:

Transfer Opportunities, see note below.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

Human Services

HUMAN SERVICES

Are you friendly, open, understanding, and cooperative? Do you like to 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

INDEX

BEHAVIORAL SCIENCE

Human Services

GRCC Educational Choices:

Associate in Arts (MACRAO Agreement)

Contact: Counseling Department
(616) 234-4130

ANTHROPOLOGY:

Transfer Opportunities, see note below.

HUMAN ECOLOGY:

Transfer Opportunities, see note below.

PSYCHOLOGY:

Transfer Opportunities, see note below.

SOCIAL WORK:

Transfer Opportunities, see note below.

SOCIOLOGY:

Transfer Opportunities, see note below.

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.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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	115	Client Growth and Development #	3	3
CJ	140	Juvenile Delinquency	3	3
—	—	Natural Science Elective **	4	7
			16	

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	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
			16	

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
			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
			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.

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, see note below.

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.**

continued—

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

LAW ENFORCEMENT - continued

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
			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
			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
			7	

Second Year

Third Semester				
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	
			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	
			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
			16	

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
			16	

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

Second Year				
Third Semester			**Credits**	**Contact Hours**
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
			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
			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 they have completed the community college Child Development or 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	5
CD 119	Methods of Preschool Ed. (Preschool CDA) OR	(4)	6
CD 210	Infant/Toddler Development (I/T CDA)	(4)	5
CD 218	Preschool Management	3	3
CD 180	Cooperative Education	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).

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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	5
CD 105	Foundations of Early Childhood Ed.	3	3
— —	Natural Science Elective	4	4
		17	

Second Semester			
EN 102	English Composition 2 ±	3	3
CD 119	Methods in Pre-school Education #	4	6
EN 250	Children's Literature	4	4
CD 215	Adult-Child Interaction	3	3
PY 201	General Psychology	3	3
		17	

Second Year

Third Semester		Credits	Contact Hours
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	3	3
CD 260	Emergent Literacy	(3)	3
— —	Humanities Elective	4	4
		15	

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	2
WE 157	Elementary Games and Rhythms	1	2
— —	Natural Science Elective **	4	
		13/14	
	Total Credits	**62/63**	

* 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, see note below.

FAMILY STUDIES:

Transfer Opportunities, see note below.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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 as 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
C0 101	Introduction to Computer Applications	2	2
		15	

Second Semester

		Credits	Contact Hours
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 (Recommended *HS 249 History of United States from Exploration through Reconstruction OR HS 250 U.S. History from End of Reconstruction to the Present)*	3	3
MA 210	Mathematics for Elementary Teachers 1 OR		
MA 211	Mathematics for Elementary Teachers 2	4	4
WE 156	First Aid **	1	2
		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.

\+ Paraprofessional Education students do not complete the CD 119 or CD 210 prerequisite for this course.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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 various 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.

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.

PROFESSIONAL CORE
CD 118 Human Growth and Development * . . . . . 4 cr.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

*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.

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

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.

Transfer Opportunities, see note below.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.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 GRCC Spectrum Theater Building, 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.

		Credits	Contact Hours
First Semester			
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 200	Hospitality Management	3	3
Actual hours in classroom per week— 34		19	
Second Semester			
CA 135	Buttercream Cake Decorating Basics	2	2
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
CA 234	Marketing	3	3
		18	
Actual hours in classroom per week— 37/7 weeks			
		29/7 weeks	
Summer Session (Required)			
CA 180	Cooperative Education in Culinary Arts (student must satisfy a minimum 240-hour work requirement)	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 has increased.

Job opportunities for trained cooks and chefs are expected to be very good in the years ahead.

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. Students operate an open-to-the-public restaurant–The Heritage. The curriculum also includes lecture courses in nutrition, sanitation, purchasing, and personnel management.

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.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

New students may enter the Culinary Arts program in either August or January of any year.

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 offers many rewards. Promotions are often rapid and salaries are often high for capable and energetic employees.

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**. 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
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	(3)	4
BA 101	Business and Technical English 1	(3)	3
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	

Second Year

Third Semester

		Credits	Contact Hours
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	(3)	3
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— 32		17	

Total Credits **72**

Transfer Opportunities, see note below.

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.** 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—

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

CULINARY MANAGEMENT - 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 224	Bakery/Deli Operations	5	12.5
CO 101	Introduction to Computer Applications	2	2
EN 101	English Composition 1 OR	3	3
BA 101	Business and Technical English 1	(3)	3
WE 156	First Aid	1	2
		17	

Actual hours in classroom per week— 38/7 weeks
13/7 weeks

Summer Session (Required)

CA 180	Cooperative Education in Culinary Arts (student must satisfy a minimum 240-hour work requirement)	3	
		3	

Second Year

Third Semester

CA 114	Food Production OR	5	12.5
CA 115	Table Service		
CA 200	Hospitality Management	3	3
CA 212	Food Purchasing	2	2
CA 238	Computer Applications in Food Service	2	2
BA 207	Business Law 1	3	3
EN 102	English Composition 2 OR	3	3
BA 102	Business and Technical English 2	(3)	3
		18	

Actual hours in classroom per week— 38/7 weeks
13/7 weeks

Fourth Semester

		Credits	Contact Hours
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	(5)	12.5
CA 245	Advanced Table Service	(5)	12.5
CA 234	Hospitality Marketing	3	3
CA 235	Beverage Management OR	2	2
CA 151	Introduction to Wine	(2)	2
PS 110	Survey of American Government	3	3
		16	

Actual hours in classroom per week— 30/7 weeks
17/7 weeks

Total Credits 72

Transfer Opportunities, see note below.

HOTEL MANAGEMENT:

Transfer Opportunities, see note below.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

SOCIAL SCIENCES

Human Services

GRCC Educational Choices:

Associate in Arts (MACRAO Agreement)

Contact: Counseling Department
(616) 234-4130

ECONOMICS:

Transfer Opportunities, see note below.

HISTORY:

Transfer Opportunities, see note below.

INTERNATIONAL RELATIONS:

Transfer Opportunities, see note below.

POLITICAL SCIENCE:

Transfer Opportunities, see note below.

PUBLIC ADMINISTRATION:

Transfer Opportunities, see note below.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

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
- Grounds Keeper
- Zoologist
- Biochemist
- Chemist
- Horticulture Worker
- Surveyor

INDEX

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, see note below.

BIOTECHNOLOGY:

Transfer Opportunities, see note below.

DIETETICS:

Transfer Opportunities, see note below.

CHEMISTRY

Natural Resources and Agriculture

GRCC Educational Choices:

Associate in Applied Arts and Sciences
Associate in Arts (MACRAO Agreement)
Associate in Science (MACRAO Agreement)
Certificate

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—

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

CHEMICAL TECHNOLOGY - 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 109	Survey of General Chemistry *	5	7
CO 101	Introduction to Computer Applications OR	2	2
CO 151	Electronic Spreadsheet	1	2
EN 100	Writing † OR	3	4
EN 101	English Composition 1 †	(3)	3
MA 131	Precalculus	5	5
		15/16	

Second Semester			
CM 212	Quantitative Chemical Analysis	5	9
CM 231	Introduction to Organic Chemistry #	4	5.5
EN 102	English Composition 2 †	3	3
PS 110	Survey of American Government	3	3
WE —	Wellness	1	2
		16	

Third Semester			
CM 282	Instrumental Analysis	5	9

A summer internship (employment) at a local chemical industry is also encouraged.

Second Year

Fourth Semester			
PH 118	Physics for Chemical Technicians	4	6
CM 241	Biological Chemistry	4	5.5
SC 131	Fundamentals of Public Speaking	3	3
— —	Elective	3/4	
		14/15	

Fifth Semester			
— —	Elective	3/4	
CM 252	Polymer Chemistry	3	4
EN 249	Technical Writing	3	3
— —	Elective	3/4	
		12/14	

Suggested Non-Chemistry Electives			
EC 251	Principles of Economics 1	3	3
EC 252	Principles of Economics 2	3	3
BA 103	Introduction to Business	4	4
BI —	Most Biology courses	3/4	
CO —	Most Computer Applications courses	2/4	
	Total Credits	**62/66**	

*# More intensive courses or course sequences may be used to replace these less intensive courses.

* CM 109 may be replaced by **either** the CM 103 and CM 104 sequence **or** the CM 113 and CM 114 sequence.

\# CM 231 may be replaced by **both** the CM 236 and CM 237 **and** the CM 238 and CM 239 course sequences.

† The two-course EN sequence may be replaced by the BA 101 and BA 102 sequence.

If these replacements are made, CM 241 and CM 252 can become electives and the number of total credit hours will remain within the same range.

CHEMICAL TECHNOLOGY: (Code 645)

Suggested GRCC Program: Certificate

Students in this one-year program learn the theory and become proficient in the skills necessary to assume jobs as chemical laboratory assistants and technicians. They take four hands-on laboratory classes in chemistry as well as courses in writing and mathematics.

All credits earned in this certificate program may be applied toward any of the Associate degrees in Chemical Technology. 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 FOR THE ONE-YEAR CERTIFICATE:

First Semester		Credits	Contact Hours
CM 109	Survey of General Chemistry *	5	7
MA 110	College Algebra	4	4
EN 100	Writing † OR	3	4
EN 101	English Composition 1 †	(3)	3
		12	

Second Semester			
CM 231	Introduction to Organic Chemistry #	4	5.5
EN 102	English Composition 2 †	3	3
CM 212	Quantitative Chemical Analysis	5	9
		12	

Third Semester			
CM 282	Instrumental Analysis	5	9
CO 101	Introduction to Computer Applications OR	(2)	2
CO 151	Electronic Spreadsheet	1	2
		6/7	

	Total Credits	**30/31**

*# More intensive courses or course sequences may be used to replace these less intensive courses.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

* CM 109 may be replaced by the CM 103 and CM 104 sequence or the CM 113 and CM 114 sequence.

\# CM 231 may be replaced by the CM 236 and CM 237 sequence.

† The two-course EN sequence may be replaced by the BA 101 and BA 102 sequence.

CHEMISTRY:

Transfer Opportunities, see note below.

MORTUARY SCIENCE:

Transfer Opportunities, see note below.

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, see note below.

ENVIRONMENTAL STUDIES:

Transfer Opportunities, see note below.

FISHERIES AND WILDLIFE:

Transfer Opportunities, see note below.

FORESTRY:

Transfer Opportunities, see note below.

NATURAL RESOURCE MANAGEMENT:

Transfer Opportunities, see note below.

WATER ENVIRONMENTAL TECHNOLOGY:

Transfer Opportunities, see note below.

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.

continued—

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

WATER PURIFICATION TECHNOLOGY - continued

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	Honors 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	Honors 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.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling Office and on-line at **www.grcc.edu**.

JOB TRAINING

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-TEC® 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 (Computer Aided Design) - 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.

Computer Support Technician - 18 weeks

The Computer Support Technician program is a hands-on course designed to prepare students for entry-level employment as a PC Support Specialist. Students will also prepare for the nationally recognized COMPTIA A+ Hardware and Software certification exam.

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 in length, and classes begin every month of the year. In certain instances it may be possible, with the permission of the Director and the instructor, to enroll for short periods of time in order to receive instruction in certain specific skill areas.

Selection of students is based on the date of application, academic readiness, interviewer's recommendation, and successful completion of the assessment process. If enrollment in a program is limited and the applicant has met all of the above criteria, final selection will be based upon the date of application.

The cost of a Job Training program is $3,600 for In-District residents (Kent County) and $5,400 for Out-of-District residents.

Refunds

Refund policy for all programs offered by GRCC Job Training:

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 asked to appear 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 (Computer Aided Design) - 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

Computer Support Technician - 18 Weeks

Overview:

This hands-on program will be a combination of individual, group, and computer-based lab instruction. Students in this program will survey various operating systems and have an overview of the Microsoft Office Suite applications. Students will learn to install, configure and troubleshoot computer hardware and software, and they will learn networking technology for local area networks (LANs). This program also prepares students for the nationally recognized A+ Certification test.

Course Recommendations:

The student should have an interest in computers and possess their own computer system. The ability to work with others, good hand/eye coordination, and manual dexterity are also desired. Students are also required to score at least a level 5 on the Work Keys Assessment.

Course Outline:

- Teamwork and Problem Solving
- Professional Development and Professionalism
- Customer Relations
- Computer Trends in Business and Society
- Database Applications
- E-Mail
- Hardware Installation and Configuration
- Software Installation and Configuration
- Network Technologies
- Windows Environment
- Word Processing
- Spreadsheet Application
- Employability 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 read blueprints, perform shop math, communicate effectively, and promote 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

COURSE CODES AND DESCRIPTIONS

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.

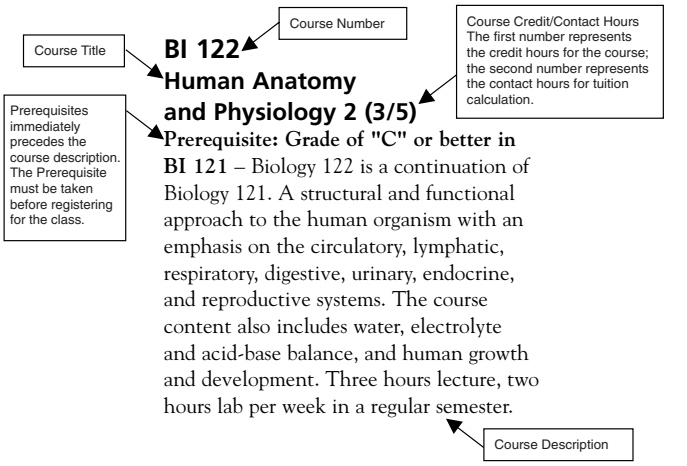
Further, no more than two credits of the above-mentioned 12 may be in Independent Study courses numbered 298, 299. Any Project Seminar and Independent Study course may be repeated for credit up to the above limits.

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. Practicums, Internships
4. Independent Studies
5. Field Work

AD – ASSOCIATE DEGREE NURSING

AD 100
Perspectives in Nursing (1/1)
For students who want to learn about nursing; includes historical perspectives, introduction to nursing process and critical thinking, levels of nursing education, standards of conduct, the legal scope of practice, and career opportunities in nursing. Open to all students.

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 125
Medical-Surgical Nursing 1 (3/5)
Prerequisites: Formal acceptance into the Associate Degree Nursing Program and AD 100 and BI 121 (with a grade of "C" or better); Corequisites: AD 130, AD 148, and BI 122 – Nursing assessment skills are introduced and used to form the basis for nursing care planning. The nursing process and critical thinking are used to determine and prioritize nursing care. Basic nursing skills, drug calculations, documentation, and medical terminology are introduced and practiced in structured settings. The teaching role is explored. Clinical experience emphasizes the assessment of healthy persons.

AD 130
Psychosocial Nursing Foundations (3/5)
Prerequisites: AD 100, BI 121 (with a grade of "C" or better) and PY 201; Corequisites: AD 125, AD 148, and BI 122 –Mental health concepts are introduced and used with the nursing process to promote mental health and psychosocial assessment of the client. Students apply communication skills to develop therapeutic relationships in individual and group settings. Application of mental health theories to nursing is explored. Clinical experience is provided to meet mental health needs of persons in structured health care and community settings.

AD 148
Community/Transcultural Nursing 1 (1/1)
Prerequisites: AD 100 and BI 121 (with a grade of "C" or better); Corequisites: AD 125, AD 130, AD 150, and BI 122 – This course will provide an introduction to community/transcultural nursing to provide a foundation for understanding the nurses' role in the community. It highlights the nurse's need for sensitivity and respect when providing care to diverse populations.

AD 150
Medical-Surgical Nursing 2 (3/5)
Prerequisites: AD 125 and AD 130; Corequisites: AD 148 and BI 122 (with a grade of "C" or better) – The nursing process is used to guide care for persons with simple medical-surgical needs. Course includes care of the client in the perioperative period. Complementary therapies are discussed along with traditional treatment modalities. Pharmacokinetics are introduced. Students care for patients with simple health needs in structured health care and community settings.

AD 155
Medical-Surgical Nursing 3 (4/7)
Prerequisites: AD 148, AD 150, and BI 122 (with a grade of "C" or better); Corequisites: AD 158, BI 126, or BI 127 (with a grade of "C" or better) –The nursing process is used to guide care for persons with medical-surgical needs. a continuation of AD 150, Medical-Surgical Nursing II. Complementary therapies are discussed along with traditional treatment modalities. Concepts of parenteral medications are introduced. Students care for patients with in structured health care and community settings.

AD 158
Community/Transcultural Nursing 2 (1/1)
Prerequisites: AD 148 and AD 150; Corequisite: AD 155 and AD 175 – This course will require the students to utilize the nursing process in completing a transcultural assessment of a community. The student will analyze data to identify health related issues within the community and develop a plan to address these needs.

AD 175
Medical-Surgical Nursing 4: The Older Adult (4/7)
Prerequisites: AD155 and AD148; Corequisites: AD 158, BI 126 or BI 127(with a grade of "C" or better) – The nursing process is used to delineate care for older adults. Incorporates concepts of health promotion and human response to the aging process. Clinical experience is provided in structured health care and community settings.

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; Corequisites: AD 248 and PY 232 – 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 230
Mental Health Nursing (4/7)
Prerequisites: AD 175 and AD 158; Corequisite: AD 248 and PY 232 – Complex mental health disorders are discussed. Mental health concepts re used with the nursing process to promote optimal health and well-being. Students form therapeutic relationships with clients. Clinical experiences involve caring for persons experiencing a mental health crisis in various settings within the community.

AD 232
Obstetrical Nursing (4/7)
Prerequisites: AD 175, AD 158, and BI 127 (with grade of "C-" or better) – The nursing process is used to care for persons during the reproductive cycle. Course incorporates concepts of interpersonal relationships while promoting family-centered care. Clinical experience is provided in structured health care and community settings.

AD 248
Community/Transcultural Nursing 3 (1/1)
Prerequisites: AD 175 and AD 158; Corequisites: AD 230, AD 232, and PY 232 – Application of the nursing process in a community setting is expected. Critical thinking is stressed along with collaboration with community resources. Students partner within the community to introduce health promotion and disease prevention strategies.

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 (2/2)
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 individuals who are serving as apprentices and to those in industry trades who wish to upgrade their skills. For further information contact the Director of Workbased Learning at (616) 234-3660.

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 (1/1.12)
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 (1/1.12)
Prerequisite: AP 114A – Students interpret engineering working drawing measurements and dimensioning as well as interpret engineering drawing notes.

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 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 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 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 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 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 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 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) MasterFormat. 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, Winter, and Summer semesters.

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 Fall, Winter, and Summer 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 129
Architectural 3D CAD (3/4)
Prerequisites: AR 119, AR 105, and AR 125 – Students learn how to create floor plans with walls, windows and doors using 3D CAD. Furniture, fixtures, equipment, roofs, and floors are added to the architectural plan. Building elevations, sections, and perspectives are then generated and building drawings created. Four hours lecture/lab combination. Offered Fall and Winter semesters.

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 (2/2)
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.

These courses are offered during the day and evening only in odd years: AR 120, AR 121, and AR 202.

This course is offered during the day and evening only in even years: AR 201.

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. Drawing 1 is strongly recommended to increase student success in this course. 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-lifes, 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)
Business and Technical English 2 is a technical writing course for business and technical students. Topics covered include the process of writing, guidelines for producing effective written and oral business communications, research, and page design. Some of the types of communications required include memos; letters; instructions; proposals; informal, formal, and oral reports; and graphics.

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 156 or BA 256 – 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; advertising production; and 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 - 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 - 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.

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; jurisdiction and the courts; dispute resolution; torts; business crimes; contracts; warranty and product liability; agency, consumer, environmental, employment, and property law.

BA 208
Business Law 2 (3/3)
Introduction to intellectual property, sales contracts, negotiable instruments, banking, secured transactions, creditor rights, bankruptcy, business organizations, antitrust, estate planning, and international law.

BA 209
Issues in Business Ethics (3/3)
Students learn perspectives of business practices and policies which critically examine 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; nonparametric 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 156 or 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 noncompensated 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.

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. 3 hours lecture, 2 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 HIGHLY RECOMMENDED. – 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. Three hours lecture, four hours lab.

BI 104
General Zoology (4/7)
Prerequisite: Successful completion of BI 101 or one year of high school biology is HIGHLY RECOMMENDED. – 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.

BI 117
General Human Anatomy and Physiology (4/5)
Structural and functional approach to the human body through study of cells, tissues, and the various body systems. This general survey course fulfills the general education requirements for natural science and is open to students desiring basic knowledge of human anatomy and physiology. This course covers the nature and process of science through the study of the structure and function of the human biology. Emphasis is placed upon cell biology, tissues and various systems of body including the integumentary, skeletal, muscular, nervous. circulatory, lymphatic, respiratory, digestive, urinary, endocrine and reproductive systems. The course consists of 3 hours of lecture and 2 hours of laboratory during a regular semester.

BI 121
Human Anatomy and Physiology 1 (4/5)
Prerequisites: Successful completion of high school biology or an introductory college biology course (BI 101, BI 117). – The first of a two-semester course sequence. This course covers a structural and functional approach to human biology with an emphasis upon cell biology, tissues and the integumentary, skeletal, muscular and the nervous system. This course satisfies the general education requirements for natural science and is required for most allied health and healthcare related fields such as nursing, radiology and dental hygiene. The course consists of 3 hours of lecture and 2 hours of laboratory during a regular semester.

BI 122
Human Anatomy and Physiology 2 (4/5)

Prerequisite: Successful completion of BI 121 – The second of a two-semester course sequence. This course covers a structural and functional approach to human biology emphasis upon the circulatory, lymphatic, respiratory, digestive, urinary, endocrine and reproductive systems. This course the general education requirements for natural science and is required for most allied health and health-care related fields nursing, radiology and dental hygiene. The course consists of 3 hours of lecture and 2 hours of laboratory during 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 126
Microbiology and Infectious Diseases (2/3)

This course presents the principles of microbiology for students in health career programs. It will provide students with a knowledge of microorganisms (bacteria, viruses, fungi, helminths and protozoa) and the infections caused by them. Understanding the health field applications of microbiology and the etiology of infectious diseases will result in improved patient management and control of infection. The study will also include prevention through sanitation, disinfection and sterilization, and host immune defenses. This course will not fulfill the laboratory science requirement for baccalaureate institutions. Three hours lecture/lab per week.

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 151
Cells, Molecules, and Genes (4/6)

Prerequisites: successful completion of high school biology and chemistry, or successful completion of BI 101 and CM 100, or permission of the instructor. – 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. Three hours of lecture; 3 hours of laboratory.

BI 152
Biological Diversity (4/6)

Prerequisites: Successful completion of BI 151 with a grade of C- or better – This is the second course 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 of lecture; 3 hours of laboratory.

BI 171
Introduction to Marine Science (3/3)

An introduction to the study of the two main branches of the marine sciences; marine biology and oceanography. Topics covered include sea floor topography and geologic processes, water circulation, a survey of the major marine habitats, diversity of marine organisms and their physiological and ecological adaptations to the marine environment. Satisfies Natural Science requirement. Note: Does not meet laboratory requirement.

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. Lab fee.

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. Lab fee.

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. Lab fee.

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. Lab fee.

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, students will learn bird identification, nesting habits, songs, and behavior. Niches and habitats of specific birds will be studied as well. 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, BI 103 or BI 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)
An introduction to the principles of professional baking. This course covers the preparation of yeast dough products, quick breads, doughnuts, layered dough, simple pastries, pies, cookies and basic dessert sauces.

CA 105
Culinary Arts Skill Development (5/12.5)
Provides students with fundamental skills in quantity food preparation. Lectures cover cooking theory and principles, 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 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: CA 105 – 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, and scratch bag products particular to the retail bakeshop environment will be demonstrated. Point of sale and display merchandising are highlighted. Course will also include training in sales technique, inventory control, loss prevention and equipment cleaning and maintenance.

CA 135
Buttercream Cake Decorating Basics (2/2)
A hands-on study in decorating and finishing techniques for baked products with specific instruction on buttercream 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 Buttercream 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 buttercream with specific instruction in border variety and color accents incorporating three or more different flowers in a visually appealing spray. Various flower spray formations, 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
Buttercream Wedding Cakes (2/2)
Prerequisite: CA 135 and 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 buttercream 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
Gum Paste, Rolled Fondant, and Royal Icing (2/2)
Prerequisite: CA 135 and 136 or permission of the instructor – A hands-on introduction to 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 centerpieces 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)
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 seven weeks and involves 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 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, CA 105, or CA 124 and prior written approval of Co-op Coordinator – Students participate in a hospitality related cooperative program of work and learning activities involving employers and departmental instructional staff. Students work a minimum of 240 hours under supervision at approved employment locations. Performance is monitored by the instructional staff and the students' work location supervisor.

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 to properly forecast sales and budget costs in the food-service industry is provided.

CA 204
Pastry (5/12.5)
Prerequisite: CA 104 – Hands-on pastry class designed to provide the students with modern and classical dessert making techniques. The art of making ice cream and sorbet, candies and chocolate decorations, tortes and fancy pastries, sugar work and centerpiece decorations, are among the many facets of pastry art explored and taught in this course. This course is designed to provide the students with practical bakery skills for restaurant, wholesale or retail bakeshop.

CA 205
Banquet and Catering (5/12.5)
Prerequisite: CA 105 and CA 114 or CA 115 – Students learn the practical skills of buffet catering and banquet organization in off-premise 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 the principles involved with the preparation of food. Students learn to recognize standard products and understand how products are affected by different preparation methods.

CA 212
Food Purchasing (2/2)
The purchasing practices and controls that help to insure profit for a foodservice operation are introduced. Foods are tasted to teach correct product specification. Products include cheese, leafy greens, canned fruits, vegetables and convenience foods.

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 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 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 by preparing meats, game, stocks, soups 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 writing and understanding.

CA 245
Advanced Table Service (5/12.5)
Prerequisite: CA 115 – Students learn table side preparation of entrees, desserts, and coffees. 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 offers a comprehensive review of foods, nutrients, and nutrition. Major nutrient classes: carbohydrates, fats, protein, vitamins, minerals, and water will be investigated. The relationship of foods and nutrients to areas of current interest including diet and disease (diabetes, high blood pressure, heart disease, and cancer, etc.), weight control, diet and exercise, and dietary from pregnancy through older adulthood will be discussed. Current dietary recommendations including the Food Guide Pyramid, U.S. Dietary Guidelines, and Recommended Dietary Allowances (RDA) will be compared and contrasted.

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 vinoculture 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 per semester under a qualified supervisor at approved employment and attend scheduled class sessions.

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 and 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 and 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 birth 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. Students will be required to complete 20 hours of reading instruction with a child through an approved tutoring program.

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 per 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; Corequisite: CD 280 – In this course students develop portfolios and discuss the challenges of their work experience. The Professional portfolio includes a resume, autobiography, and documentation of the students own teaching and educational experiences. The Child portfolio includes documentation of a child's growth over the semester through photographs, anecdotal records, assessments and samples of the child's work. The student will also complete the CDA Competency Statements, and the CDA Resource File. Students who have already completed the CDA Competency Statements and CDA Resource File through past course work will compile a Statement of Philosophy and an Article Resource File.

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. Presentence 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 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.

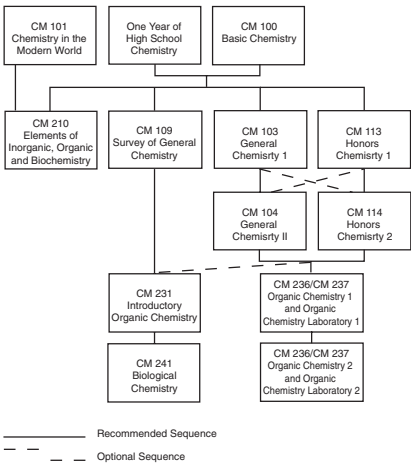
CJ 285
Criminal Justice Practicum 1 (3/3)
Criminal Justice credit for individuals who will be given supervised, nonsalaried positions as observers with various criminal justice agencies. Students will be required to maintain a log of activities and submit a report at the end of the semester. All activities are monitored by the instructor.

CJ 286
Criminal Justice Practicum 2 (3/3)
Criminal Justice credit for individuals who will be given supervised, nonsalaried 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



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)
Prerequisite: MA 104 – A normally non-transferable, non-laboratory course designed to prepare students for CM 103, CM 109 or CM 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 1 (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. Offered Fall semester only.

CM 114
Honors Chemistry 2 (4/7)
Prerequisites: CM 113 or completion of CM 103 with a grade of 'A' – Continuation of CM 113. Topics include gas laws, equilibrium, acids and bases, redox chemistry, electrochemistry, coordination chemistry, 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 reactions) followed by a study of the major classes of organic and biochemical molecules with a focus on 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 109 and CM 114 – A rigorous course that delves into quantitative methods of chemical analysis. Classical wet chemistry techniques such as 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 higher – 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. Lab fee. Offered Fall and Winter semesters.

CM 252
Polymer Chemistry (3/4)
Prerequisite: CM 231 or CM 236 and CM 237 – 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 Fall, Winter, and Summer 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 Fall, Winter, and Summer 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)
Prerequisite: CO 116 recommended or previous programming experience – 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 the 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 101 – 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 contructs, 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 or CO 105 – "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 Macromedia Dreamweaver 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 161
Introduction to Database Applications (3/3)
Prerequisite: CO 124 or equivalent – An introduction to interactive data storage, retrieval, and reporting for both single and organizational users (client-server settings) using database management systems. In this hands-on course with each student at a PC, students will create, edit, and query files; print mailing labels and reports from their data; and review other application development tools customarily included with a DBMS.

CO 162
Introduction to Desktop Publishing (2/2)
Prerequisite: CO 101; Corequisite: 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 168
Introduction to Internet Animation (2/2)
Prerequisite: CO 120 and CO 146 or equivalent – This two-credit course is hands-on and designed for people with little or no previous experience with animation software. Prior experience with graphics software and art courses would be helpful. Topics to be covered include working with various tools and objects available in animation software, creating and manipulating multi-layered graphics, working with animation frames and tweening, writing scripts to make the graphics interactive, and publishing the graphics for use.

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)
Prerequisite: CO 124 or CO 127: Student should have basic understanding of programming structure and logic. Recommended: CO 170 – 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.

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.

CO 205
Advanced Windows Operating System (2/2)
Prerequisite: CO 105 or successful completion of challenge exam or equivalent experience – An advanced level operating system class in which students explore and practice with the more complex and advanced features of the current version of the Microsoft Windows operating system. Hardware, software and general operating systems concepts are presented as well as practical applications of Windows functions. Components: Lecture/Lab Combination

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)
Prerequisite: CO 132 or equivalent – 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 CNA 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 network. Topics include 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 server. Printer management and remote access will be applied to a Windows server.

CO 241
Web Databases (3/3)
Prerequisites: CO 146, CO 171, CO 117 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 246
Web Server Admin/Security (3/3)
Prerequisites: CO 146 and CO 241 – This course prepares students to establish and manage a web server. Issues such as selecting server hardware and software will be reviewed. Using LINUS/UNIX, Windows and Apache server software, students will learn how to configure a server, control access to web sites, set up email aliases and related services. Students learn how to identify security risks, how to configure servers to avoid unwanted access, where to find and how to read system log files, where to turn services on and off, and the basic theory of a firewall. Students also configure the server to allow and disallow various types of access, including password protecting directories, turning file transfer (FTP) on and off, and setting up file system permissions.

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 walkthroughs, 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, networks, peripherals, parallel and serial input/output standards, microcomputer busses, modems, CD ROMs, printers and analog devices. Students learn to connect the microcomputer to several different kinds of input and output devices.Four hours lecture/laboratory 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 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 chairside 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)
Prerequisite: DH 209, DH 234, DH 182 Corequisite: DH 235, DH 205, DH 214, DH 227, 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, 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 EC 121

DR 150
Introduction to Solidworks (3/4)
Students learn to use a parametric computer aided design system to generate 3D models, assemblies, and detail drawings. Solidworks software is used. Four hours lecture/lab.

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 EC 120

DR 180
Introduction to Mechanical Concepts (3/4)
This course is designed to introduce the student to mechanical concepts. The course includes fasteners, springs, piping, manufacturing and machining principles, drive mechanisms and welding. This course will include disassembly and reassembly of power transfer mechanisms and manufacturing tools. Four hours lecture/lab. Offered Fall semester.

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 EC 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 moldmaking. 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 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 – A continuation of Mechanical Desktop Module A, 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 – A continuation of Mechanical Desktop Module B. Students learn parent/child feature relations; advanced modeling techniques including 3D fillets and chamiers, 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 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 – A continuation of DR 258A. 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 – A continuation of DR 258B. 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 – A continuation of DR 258C. 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 260
Introduction to Catia (3/4)
Prerequisite: EG 110 or DR 228 and DR 170, DR 238, DR 258 or DR 250 – Students learn to use a Parametric and Bi direction Computer Aided Design system to generate: 3D models, shaded pictures, assemblies, and detail drawings. Catia software is used. Four hours lecture/lab.

DR 265
Introduction to Designing with
Surfaces (3/4)
Prerequisite: DR 258 and EG 110 – Students learn to use a Computer Aided Design System to generate 3D models for wireframe and surface models. These models are used to inspect surface quality and develop CNC (Computer Numeric Control) data for Manufacturing. Four hours lecture/lab. Offered Fall 2005.

DR 279
Team Design Project (4/6)
Prerequisite: DR 180, DR 212, DR 224, DR 258, DR 265, EG 110, EG 121, and MN 199 – A project-oriented laboratory course in which the students use a team approach to solve technical problems similar to those encountered by designers in the industry. Using computer aided solid-modeling software, the team will create the necessary 3-D models and proto-types, use analysis software tools and technical documentation. Each team will be required to make oral and written presentations to their class mates. Six hours lecture/lab. Offered Winter 2006.

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, nonexposure 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 macroeconomics. 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)
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. Classroom observations, interviews, personal assessments and readings are important components 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 as well as current issues and trends. Students will write their personal philosophy of education as a capstone of ED-200. At all junctures in the course, students will be challenged to extend classroom discussion through additional reading, collaborative projects and written reflections.

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 – 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, 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 144B – 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 of hardware components, programming techniques, installation, and maintenance of complete systems. Hands-on programming of PLCs is emphasized. Three hours lecture/laboratory combination.

EL 166
Advanced Programmable Logic Controllers (2/3)
Prerequisite: EL 164 – A continuation of EL 164. A continuation of EL-164. Students learn advanced concepts of programmable logic controllers (PLCs). Memory organization, block moves, documentation, math instructions, analog I/O, program development, and communication. Hands-on PLC projects are emphasized. Three hours lecture/laboratory 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 devices in the transmission and reception of radio frequency, 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, to include rectifiers, thyratons, SCR`s , control circuits, photocells, electronic heaters, welding, magnetic amplifiers, ultrasonics and industrial computers. Six hours lecture/laboratory combination.

EL 205
Transistor Electronics (3/6)
Prerequisite: EL 107 – A study of semiconductors and their application to modern circuits; semiconductor physics, diodes, transistors, amplifiers, oscillators and design applications. Six hours lecture/laboratory 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: EL 161 – An introduction to logic circuits. Includes digital gates, flip-flops, counters, registers, multiplexers, and analog-to-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. Fours hours lecture/lab combination.

EL 265
Computer Systems (2/4)
Students learn to connect microcomputers to peripheral devices; includes microprocessor architecture, networks, peripherals, parallel and serial input/output standards, microcomputer busses, modems, CD ROMs, printers and analog devices. Students learn to connect the microcomputer to several different kinds of input and output devices.Four hours lecture/laboratory 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)
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 writing 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 246
Writing for Publication (3/3)
An introduction to researching, writing, and publishing nonfiction magazine articles for a variety of freelance 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 - 1800's), colonial settlers (1600's - 1700's), revolutionary founders (1700's), African American (1700's-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 several Shakespeare and other classic plays (generally, two Shakespeare plays and one other Stratford offering), which they will view at the Stratford Shakespeare Festival in Stratford, Ontario, Canada. Course content 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. These writings will be examined in literary and historical contexts, with discussions centering around issues of language, the church, and socio-political changes in the developing nation.

EN 282
Survey of British Literature 2 (3/3)
The course surveys the major English Romantic poets, Victorian poets and prose writers, and represents modern trends and writers in British literature. These writings will be examined in literary and historical contexts, with discussions around issues of language, the church, and socio-political changes in Great Britain.

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 spotwelding, 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 calculate blank size, layout, cut out, form, fabricate, and assemble an assortment of square and round duct fittings commonly used in HVAC air delivery systems. The student will get classroom instruction in register location, duct system layout, calculating CFM & sizing ducts for CFM required. 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 illustration and creation of simple designs, 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 (4/5)
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)
World Regional Geography is devoted to an examination of the world's various regions within the context of globalization. Cultural, political, and environmental phenomena are examined among other traits, which characterize both more Developed Countries and Less Developed Countries. 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 281
Immigration and Ethnicity in America (3/3)
Through popular films, documentaries, literature, and lecture, immigration and ethnicity in the United States will be examined from historical and geographical perspectives. Case studies of various ethnic groups will be discussed in detail. Credit will not be granted for both GE 281 and HS 281.

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. Lab fee. 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 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 203
Physical/Mental Health and Aging (3/3)
Prerequisite: Recommended that GO/SO 261 be taken before or concurrently – Physical and mental health of older adults is examined from an applied perspective for human services providers. Topics include normal and pathological changes; family and social factors; skills and adaptations for maintaining good physical health; assessment, intervention, and skills for helping older adults access appropriate treatment in the health care system.

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
Aging 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 1. 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.

GR 102
Introductory German 2 (4/4)
Prerequisite: German 101 or equivalent – A continuation of the study of German begun in German 101 or its equivalent. German 102 focuses on the tenses, grammar and 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.

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)
This course will cover topics in American History from pre-contact through the era of Reconstruction. The course is intended to be a general survey of the social, cultural, economic, and political currents that have shaped early American history. The course presentations will pay special attention to the issues of cultural diversity and will attempt to expose students to the agency of the common man.

HS 250
U.S. History from the End of Reconstruction to the Present (3/3)
This course will cover topics in American History from the era of Reconstruction to the present. The course is intended to be a general survey of the social, cultural, economic, and political currents that have shaped American history since the Civil War. The course presentations will pay special attention to the issues of cultural diversity and will attempt to expose students to the agency of the common man.

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 281
Immigration and Ethnicity in America (3/3)
Through popular films, documentaries, literature, and lecture, immigration and ethnicity in the United States will be examined from historical and geographical perspectives. Case studies of various ethnic groups will be discussed in detail. Credit will not be granted for both GE 281 and HS 281.

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
EN (Any 200 level)
Foreign Language (Any courses)
MU 107, 109, 235, 236, 237
PL (Any courses)
PO 105
SC 131, 135, 241
TH 240, 248, 249

HU 204
Humanities and the Human Adventure 1 (4/4)
Co-requisite: EN 100 or EN 101 or instructor approval – This course examines the integrated western humanities from prehistory through the medieval period while exploring the interrelationships of literature, philosophy, religion, the visual arts, and the performing arts. Concerned not only with becoming familiar with works from prescribed time periods, learners will also develop ways to critically appreciate and situate such human thoughts and expressions within the context of their counterparts as discovered in contemporary society.

HU 205
Humanities and the Human Adventure 2 (4/4)
Co-requisite: EN 100 or EN 101 or instructor approval – This course continues to examine the integrated western humanities beginning with the renaissance and advancing through the postmodern era while exploring the interrelationships of literature, philosophy, religion, the visual arts, and the performing arts. Concerned not only with becoming familiar with works from prescribed time periods, learners will also develop ways to critically appreciate and situate such human thoughts and expressions within the context of both their antecedents and contemporary society.

HU 210
The Art of Being Human (3/3)
Co-requisite: EN 100 or EN 101 or instructor approval – This course explores a wide range of experiences, ideologies and beliefs in terms of personal identity, philosophy, religion, literature, the visual arts, and the performing arts. Through exposure to diverse presentations and provocative readings, learners are challenged to step outside their current world and life view and wrestle with the interrelationship of all these forms, as they are manifest in both western and non-western traditions.

HU 240
American Life on TV (3/3)
Co-requisite: EN 100 or EN 101 or instructor approval – The course will focus on the aesthetic qualities of television programs in terms of style, character, tone, visual imagery, and the reflection of culture. Students will actively participate in the viewing of past and present television programs with an eye toward critical commentary.

HU 274
American Cinema (3/3)
Prerequisite: EN 102 and HU 273 are strongly recommended – This course explores specific narrative film genres, such as the western, the war film, the gangster film, film noir, the detective film, comedy, horror, melodrama, science fiction, and the musical. While keeping in mind the history, basic tenants, and socio-historical dimensions pertaining to different genres, students will critique films according to style and aesthetics.

HU 281
Exploring World Religions (3/3)
Co-requisite: EN 100 or EN 101 or instructor approval – Students will survey (through substantial immersion into world religion tests) the origins, teachings, values, and practices of prehistoric religions, tribal and city state religions of North America, Mesoamerica, South America, Australia, and Africa, the ancient religions of Iraq and Iran, the religions arising from India, religions of China and Japan, and the Abrahamic religions. While learning the content of individual traditions and exploring the comparative questions between/among traditions, students will focus on how human beings have answered the perennial questions about the ultimate meanings and purposes of existence.

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 – INTERIOR DECORATING AND DESIGN

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 base 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 291
Project Seminar 1(1)
Prerequisite: Permission of instructor – Offered upon demand and when interest in a particular subject area in interiors and furnishings will allow for scheduling. Seminar may be repeated if subject matter changes. Minimum student participation is 40 clock hours. The seminar allows two or more students to study and use materials in a field related to their curriculum. Students will work under the supervision of an instructor.

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
Broadcast Communication (3/3)
JR-256 focuses on all aspects in the field of broadcast communication. The course will emphasize techniques for, and the impact of, communicating through electronic broadcast media including radio and television news writing, announcing, programming, interviewing, and voice delivery techniques. New broadcast technologies, career options, media ethics, and the history of the broadcasting industry will also be discussed. This is primarily a lecture course, not a studio-based class, but will provide some hands-on experience in writing and recording pieces in a broadcast style.

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.

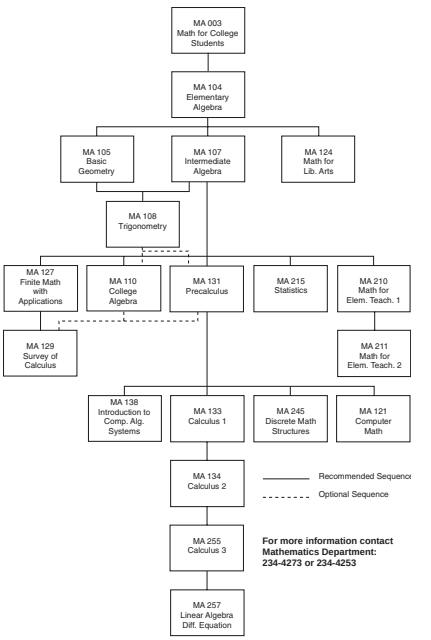
JR 298
Independent Study in Journalism 1 (1/1)
Readings, research or independent study performed under the guidance of a faculty member. Students may propose projects in any area of journalism and must have the written permission of the supervising instructor, the appropriate Department Head/Program 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. Semester(s) offered: All.

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. Semester(s) offered: All.

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. Semester(s) offered: All.

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. Semester(s) offered: All.

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)]. Semester(s) offered: All.

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. Semester(s) offered: All.

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. Semester(s) offered: All.

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. Semester(s) offered: All.

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. Semester(s) offered: All.

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. Semester(s) offered: All.

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. Semester offered(s): All.

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. Semester offered(s): All.

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. Semester(s) offered: All.

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. MA 245 is offered in the 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. Semester(s) offered: All.

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. Semester(s) offered: All.

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 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 134C
Oxy-acetylene Welding Module C (1/1.5)
Prerequisite: MN 134B – A study of oxyacetylene 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 119 or MN 199 or equivalent – 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 119 or MN 199 or equivalent – 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 119 or MN 199 or equivalent – 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)
Hydraulics Module A 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 218A and 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 119 – 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 119 – 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 101or 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 Shaninin. 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 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.
Components: 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 99
Music Fundamentals (2/2)
MU 099 is a course designed to serve as an introduction to basic music skills for students who wish to explore the reading and writing of musical symbols and their meaning. This course is not intended for the music major.

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 Four-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, musical memorization. Required of all music students who are enrolled in MU 111 through MU 162. Hence, all students electing Applied Music must be enrolled in MU 105.

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.

MU 111
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 112
Applied Music Minor (1/1)
Prerequisite: MU 111; 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 121
Applied Music Minor (1/1)
Prerequisite: MU 112; 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 122
Applied Music Minor (1/1)
Prerequisite: MU 121; 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 131
Applied Music Minor (1/1)
Prerequisite: MU 122; 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 132
Applied Music Minor (1/1)
Prerequisite: MU 131; 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 141
Applied Music Minor (1/1)
Prerequisite: MU 132; 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 142
Applied Music Minor (1/1)
Prerequisite: MU 141; 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 143
Applied Music (2/2)
Co-requisite: MU 105 (may be waived with consent of department head) – 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.

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. Fee is charged.

MU 145
Advanced Music and Computers (2/2)
Prerequisite: MU 144 – This course is the study of advanced digital audio workstation sequencing techniques. The student will learn to enter music (data) and manipulate it to serve the needs of such individuals as music producers and web designers. Fee is charged.

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 studio to complete lab assignments and projects. Separate Lab required. Lab Fee is charged.

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 acoustic affect sonic clarity, recording console use, use of various recording storage mediums, and how audio processing can improve sound image as well as recreating 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 of extensive musical instrument recording covered in the following semesters. This course explores the toolbox of the sound engineer. Separate lab required. Lab Fee is charged.

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 and has no prior formal piano study. The emphasis is on introducing basic concepts of notation, musicianship, keyboard geography, and technique. This class meets for two hours per week.

MU 171
Piano Techniques 1 (1/2)
Prerequisite: MU 169 or pretest – Development of piano techniques; sight-playing, use of primary chords, transposition, and acquisition of standard piano repertory. 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 playing, and piano repertory of various styles. This class meets for two hours per 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 playing, and piano repertory of various styles. This class meets for two hours per week.

MU 174
Piano Techniques 4 (1/2)
Prerequisite: MU 173 or permission of instructor – Continuation of MU 173. Repertorie of increased difficulty, simple accompaniments and score reading. This class meets for two hours per 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, mastery of solfegio and Curwin hand signs while singing melodies at sight will be 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.

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 solfegio 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.

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 focuses on great choral classics, sacred and secular. 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 vocalists 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 at the beginning of the fall semester. Contact department head 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 or may not 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 at the beginning of the 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 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. Service–Learning component is required.

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 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 requirement. 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 requirement. Lab fee.

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 I (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. This course counts toward the Group I (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. Introduction to music research and a research paper. This course counts toward the Group I (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. 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. 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 musical ensembles in digital surround sound. As well, stereo music mixing skills will be broadened. Students will receive a one hour private lecture/lesson each week that must be arranged with the instructor. This course requires a separate lab. There is a required lab fee and applied music fee charged for this course. Independent study.

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. This course requires a separate lab. There is a required lab fee and applied music fee charged for this course. Independent study.

MU 263
Introduction to Jazz Improvisation (1/1)
Prerequisite: One year of music theory or 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.

MU 283
Basic MIDI Sequencing (3/3)
Prerequisite: MU 102, MU 155, and MU 172 – 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. This course requires a separate lab. There is a required lab fee charged for this course.

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: BI 121, 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/fine and sensory motor areas, use of mobility aids, hand treatment, 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, and PY 231 – 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, assistive technology 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 and BI 122; Co-requisites: OT 208, OT 220, OT 224 – An investigation of movement in context of activity. A study of structural anatomy, movement and gait, basic biomechanical principles, and normal and abnormal extremity function. Clinical applications in assessment and Occupational Therapy intervention in the areas of posture, body mechanics, range of motion, muscle strength, basic exercise, positioning, and transfers.

OT 220
Fieldwork 1 (1/3)
Prerequisites: OT 102, OT 104, OT 108, OT 109, OT 110, BI 121, 122, CD 118, CD 120, PE 156, PY 201 and PY 231; Co-requisites: OT 208, OT 214, OT 224 – An introductory Occupational Therapy fieldwork 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 is arranged. Three placements of 15 hours each. Offered Fall semester only.

OT 224
Fieldwork Seminar 1 (1/1)
Prerequisites: OT 102, OT 104, OT 108, OT 109, OT 110, BI 121, BI 122, CD 118, CD 120, PE 156, PY 201, and PY 231; Co-requisites: OT 208, OT 214, OT 224 – A seminar for guided exchange of information related to fieldwork 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. Two 8 week full time experiences.

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 fieldwork experience. Focus on professional writing, quality assurance, reimbursement, scope of practice, occupational therapy techniques, job-seeking skills and exposure to professional organizations. Offered Winter 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. This course is the same as PH 101; therefore, credit cannot be granted for both courses.

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 save 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.

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.

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/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/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)
This course includes a consideration of some basic problems of philosophy, philosophic and scientific knowledge, mind and body, the nature of humanity and self-identity, values in human conduct from the point of view of historical and contemporary 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 care needs; explores problems of supportive-educative and partly compensatory persons. Students learn the importance of interpersonal relationships and care 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 Fall, Winter and Summer 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 Fall, Winter and Summer 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 ""filfochrome"" color print material using standard CP filters and dichromic color filtration. Components: Lecture/Lab Combination

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 210 – Classical as well as contemporary photographic portraiture including male, female, couples, brides, children and group portraiture.

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 (3/4)
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 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 resister 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)
This course introduces students to the institutions and processes of American Government, and improves students' skills in describing and analyzing the context of American politics.

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, Asis, 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-4R. 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 history of x-ray, electrical and physical concepts and their application to production and operation of X-ray circuit. Included are new imaging technologies such as computerized and digital radiography.

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 I (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 I (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 studied focus on romantic, friendship, family, workplace, and school relationships. Course requires active student participation, reading, research, writing journal and papers, and presentations.

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 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 counter-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)
Spanish 101 introduces the pronunciation, vocabulary and basic grammar of Spanish. In addition the course treats the culture and geography of a variety of Latin American countries. Listening comprehension and speaking are also emphasized with the aid of the International Language Laboratory and web based programs.

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 and web based programs.

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 may use software for review of grammar in the International Language Laboratory. There is some web based programming available to students.

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 review of grammar topics. There is some web based programming available to students.

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.

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)
Prerequisite: TE 103 or equivalent. Basic algebra skills are necessary for formula use and transpositions – 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 that 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 that 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
Interpretative Reading (3/3)
Prerequisite: SC 131 or permission of instructor – Classroom practice in reading aloud selections from serious and light poetry, prose, drama, and other literature. Individual and group readings with emphasis upon proper voice, facial expression, and body movement for oral reading. Also listed as SC 241.

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.

TI 100
Fundamentals of Electricity (1.25/1.25)
Fundamentals of electricity is an introductory course in electricity. This course includes the elementary concepts of electricity, DC circuits, AC circuits and components, as related to industrial maintenance.

TI 126
Electrical Control Systems (1.25/1.25)
Basic concepts of control systems used in industry. This course includes the basic principles of controls, relay and solenaids, temperature control, counter and timer controls, motor control, temperature control, and basic PLC control logic.

TI 137
Troubleshooting (1.25/1.25)
Basic techniques used to analyze and find faults in electrical systems. The course includes basic troubleshooting procedures, methods of analyzing problems and use of equipment to locate defects.

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 113
Basic Plastics Processing 2 (1/2)
Additional chemistry of plastics is explored in this module, as well as the appropriate selection of materials for various applications. Manufacturing processes and the parameters involving these processes are introduced. One hour lecture, one hour lab.

TM 114
Basic Plastics Processing 3 (1/1)
This module will build on modules one and two. We will be discussing Thermoforming operations and the nomenclature associated with it. We will explore what plastics tooling is and where we may use it. We will look at ingredients that go into plastics and what expanded plastics are all about.

TM 118
Electronics for Industry (1/2)
Basic electrical terminology is explained here, providing the basis for understanding simple electrical circuits. Simple calculations for electrical components are introduced. An emphasis is placed on common electrical testing and troubleshooting experiments. 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 ina 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 143
Water Polo (1/2)
Water Polo is a fast paced game that includes one-handed passes, mixed with carefully plotted offensive strategies and strong goal tending. Since the mid-1970's the game has evolved into the swift-paced, high action contest expected by modern sports fans. Students will understand the history of the game, techniques and fundamentals by lectures, coaching and inner class games.

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

GRCC Employees

GRCC EMPLOYEES

EMERITUS FACULTY

1985 – Mrs. Alecia Bowles DuRand, Mr. Albert Smith

1986 – Mr. E. Ray Baxter, Mr. Wendell Shroll

1987 – Mr. Gordon Hunsberger, Mr. Richard Wherity

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

1998 – Mr. Harvey Olsen

1999 – Ms. Anne E. Mulder, Ph.D.

2000 – Mr. James Skidmore

2001 – Ms. Bobbi Schrader

2002 – Ms. Nancy Clouse

2003 – Ms. Phyllis Fratzke, Dr. Till Peters

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M.S., Western Michigan University

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Hospitality Education
B.A., Michigan State University

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L.M., Universidad Autonoma de Yucatan
M.S., University of Wisconsin

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B.S., Penn State University
M.S., Arizona State University

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Dean's Office Secretary
School of Workforce Development

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Child Development
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M.F.A., Western Michigan University

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M.A., Ferris State University

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M.A., University of Iowa
Ed.D., University of Illinois

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Executive Vice President for
Business and Financial Services

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Television and Duplication Production Technician
Media Technologies

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Printing, Graphic, and Mailing Services
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M.A., University of Washington- St. Louis
Ph.D., University of Washington- St. Louis

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Library
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Facilities

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Head Football Coach
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A.S., Grand Rapids Community College
B.A., Davenport College

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Construction Trades Manager
Business & Technical Training/CCOT
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Library Services

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Preschool

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M.A., Western Michigan University

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Facilities
B.S., Bethel College

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Grounds Manager
Facilities

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Registrar
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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Custodian
Facilities

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Custodian
Facilities

Kathleen Tolhurst
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M.A., Michigan State University

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Spectrum Theater
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M.S.L., Western Michigan University

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M.A., Central Michigan University

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Campus Police

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L.P.N., Pine Rest School of Nursing
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M.A., Western Michigan University

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Library Services

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B.S., Michigan Technological University

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A.A.S., Grand Rapids Junior College
B.S., Grand Valley State University
M.S., Ferris State University

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B.S.N., Nazareth College
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Counselor
Counseling
B.A., Aquinas College
M.A., Central Michigan University

INDEX

Grand Rapids Community College

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 the back 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) ___ / ___ / ___ (Month/Day/Year) **(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) _____

(For office use only)

Predominant Ethnic Background (This is not used in the Admission process. Used for reporting purposes only.):

❒ American Indian/Alaskan Native ❒ African American ❒ Asian
❒ Hispanic ❒ White/Non-Hispanic

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 back of appliaction, #1, Category 4)
❒ **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 Technology. 912
Air Conditioning, Refrigeration & Heating, Cert. 924
Application Software 146
Architectural Drafting Technology 925
Automotive Servicing, Cert 921
Automotive Technology 922
Baking and Pastry, Cert. 156
Business Administration 102
Chemical Technology 651
Chemical Technology, Cert. 645
Child Development. 120
Computer Aided Engineering/ Mechanical Design, Cert 928
Computer Aided Engineering/ Mechanical Design 904
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
Landscape Management 652
Law Enforcement. 808
Legal Office Administration. 119
Legal Office Assistant, Cert 139
MCCVLC-Network Specialist, Cert 148
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Marketing. 125
Marketing, Cert. 116
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Medical Office Assistant, Cert 138
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Plastics Manufacturing Technology, Cert . . 945
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Quality Science, Cert 940
Recording Technology 212
Technology Option 900
Tooling and Manufacturing , Cert 920
Tooling and Manufacturing Technology . . . 908
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Unspecified Occupational Education. 008
Water Purification Technology. 650
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Web-Technical Support 161
Web Technical Support, Cert 163
Web Design/Develop, Cert 162
Welding, Cert 931
Welding Technology 932
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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

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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 704
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 811
Pre-Medicine, Trf. 516
Pre-Optometry, Trf 521
Pre Secondary Ed, Trf 803
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 Industrial, Trf 917
Theatre, Trf 430
Transfer, Other. 007
Water Purification Technology, Trf 650

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

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

CERT= Certificate
FSU= Ferris State University
TECH= Technology
TRF= Transfer
WMU= Western Michigan University

#2 HIGH SCHOOL CODES

Allegan High School 0014030
Allendale High School 0014031
Belding High School 0014078
Byron Center High School 0014127
Caledonia High School 0014130
Calvin Christian High School 0014397
Catholic Central High School 0014370
Cedar Springs High School 0014147
Central High School 0014371
City High School 0014372
Community Education Diploma . . . . .COMMED
Comstock Park High School 0014178
Coopersville High School 0014181
Covenant Christian High School 0014879
Creston High School 0014374
East Grand Rapids High School 0014375
East Kentwood High School 0014384
Foreign High School . . . . . .FOREIGNHS
Forest Hills Central High School 0014378
Forest Hills Northern High School 0014377
Fremont High School 0014343
Fruitport High School 0014345
General Education Diploma . . . . . .GED
Godwin Heights High School 0014379
Grand Haven High School 0014365
Grand Rapids Baptist High School 0014380
Grand Rapids Christian High School . . 0014373
Grandville High School 0014398
Grant High School 0014399
Greenville High School 0014404
Hamilton High School 0014412
Holland High School 0014447
Holland Christian High School 0014444
Home Schooled . . . . . .HOMESCH
Hopkins High School 0014456
Horizons High School 0014921
Hudsonville High School 0014463
Ionia High School 0014474
Jenison High School 0014491
Kelloggsville 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 . . . . . .OTHMIHS
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

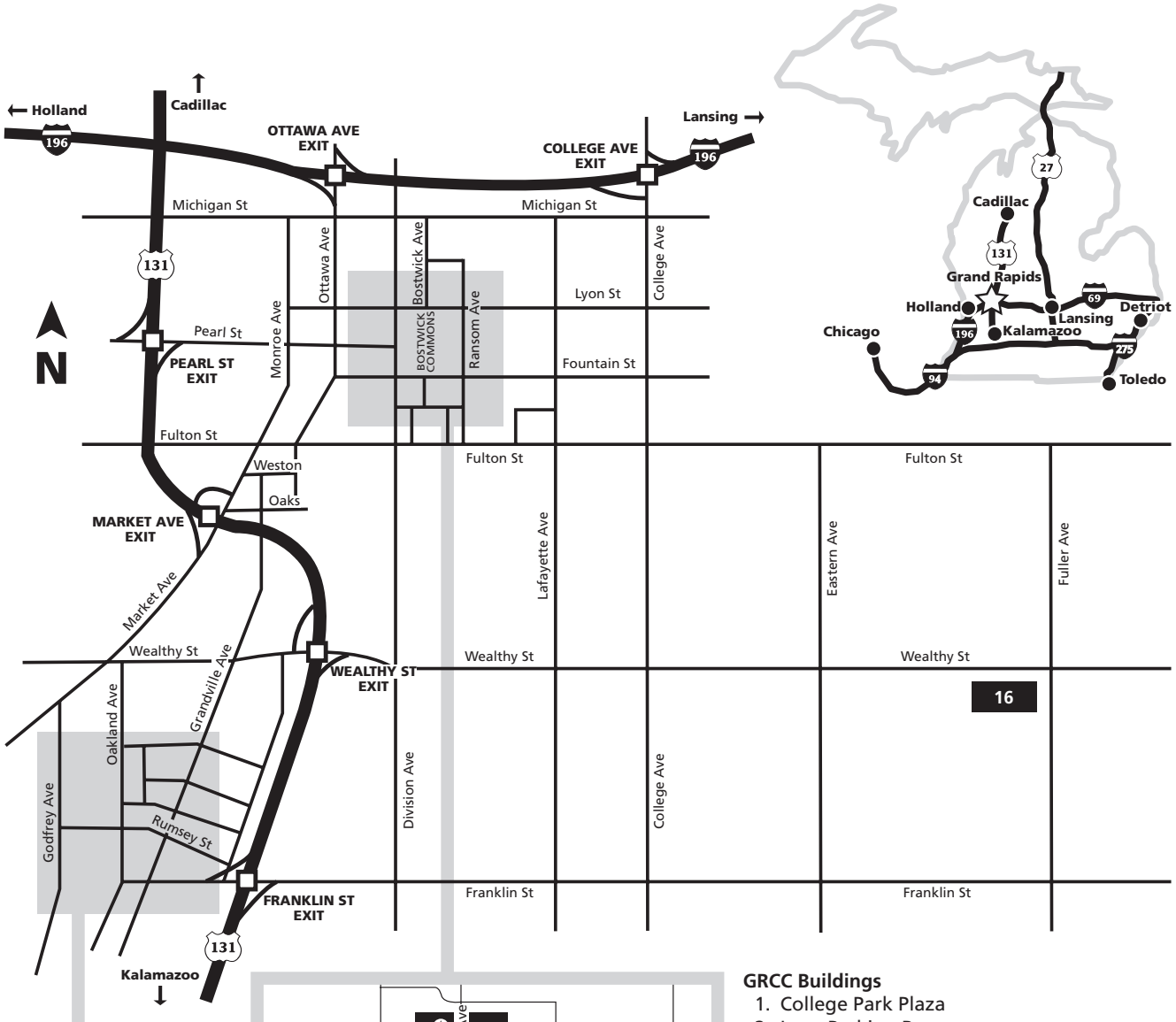
#3 SCHOOL DISTRICT RESIDENCY CODES

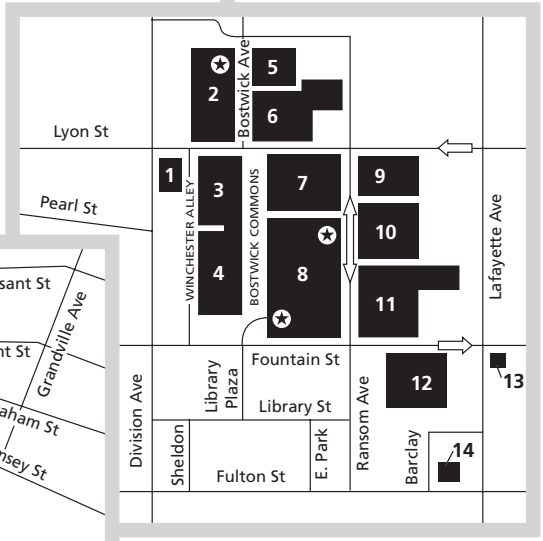
Byron Center . . . . . **BC**
Caledonia. . . . . **CA**
Cedar Springs . . . . . **CS**
Comstock Park . . . . . **CP**
East Grand Rapids . . . . . **EG**
Forest Hills . . . . . **FH**
Godfrey Lee . . . . . **GL**
Godwin Heights . . . . . **GH**
Grand Rapids. . . . . **GR**
Grandville . . . . . **GV**
Kelloggsville. . . . . **KV**
Kenowa Hills . . . . . **KH**
Kent City . . . . . **KC**
Kentwood . . . . . **KW**
Lowell. . . . . **LW**
Northview . . . . . **NV**
Rockford . . . . . **RF**
Sparta . . . . . **SP**
Thornapple-Kellogg. . . . . **TK**
Wyoming. . . . . **WY**

Out of District Resident. . . . . **IS**
Out of State Resident. . . . . **OS**

Mail the application and $20 NON-REFUNDABLE fee to:

Admissions Office
Grand Rapids Community College
143 Bostwick Avenue NE
Grand Rapids, MI 49503-3295





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 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-TEC®
16. The Learning Corner @ Wealthy Street (Parking in rear)

For locations of independently accessible building entrances, please call (616) 234-4140.

Grand Rapids Community College is an equal opportunity institution.