



Catalog ²⁰⁰⁷⁻²⁰⁰⁸



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

IMPORTANT INFORMATION SOURCES

Our online self service features make 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, pay

tuition, check financial aid, obtain our class schedule and view academic information such as grades and transcripts. Visit the website at www.grcc.edu/studentcenter for more information.

GRCC Information (616) 234-4000

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

Bookstore

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

Campus Police

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

Cashier's Office

Tuition payments
154 Main (616) 234-4020

Counseling and Career Center

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

Enrollment Center

Admissions, registration and transcripts
327 Student Center (616) 234-4000

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

Student Records - Office of the Registrar

Veteran's Program
1st Floor Main. (616) 234-4129

Student Life

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

Testing Center

Achievement, Telecourse, CLEP and MCCVLC
336 Student Center (616) 234-3413

Training Solutions

Provides continuing education opportunities, workforce training and services
151 Fountain Street, NE (616) 234-3600

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 Support. (616) 234-4226

Dean of Student Affairs

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

GRAND RAPIDS COMMUNITY COLLEGE

2007-2008 CATALOG

**BOARD OF TRUSTEES**

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 Trustee, 2011
 Trustee, 2011
 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. 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 2007-2008



Juan R. Olivarez, Ph.D.

Welcome GRCC Students!

GRCC offers you many paths to follow on your way to reaching your goals. Our **Liberal Arts** program, where we got our start in 1914, is the foundation of our long history of academic excellence. The **Workforce Development** program offers you the college-level technological skills that will be the currency of the 21st century. Whichever path you choose, you have options for earning a degree, attaining a new level of certification, or building knowledge and skills at your own pace.

Count on us to pay attention to the needs of the community—at both a local and global level—to assure that your education and skills relate to the real world.

We are especially proud of the ease with which GRCC credits transfer to other colleges and universities across Michigan and beyond. Besides being an excellent start toward a four-year degree, attending GRCC can result in significant savings. We have concurrent enrollment agreements with Grand Valley State University and Ferris State University that allow students to take courses at either institution's campus—creating more scheduling and financial options for you.

All of us at GRCC are working hard to be ready to serve you. Our Enrollment Center centralizes student services from across the campus into one convenient space just inside the main entrance of the historic Main Building. Our two M-TECs® (Michigan Technical Education Centers)—the Leslie E. Tassell in Grand Rapids and the Patrick A. Thompson in Ottawa County—deliver training programs for high-wage, high-skill, high-demand occupations that will be the backbone of Michigan's strengthening economy.

Again, welcome to GRCC. I hope you enjoy your time here and take advantage of the wonderful opportunities that our diverse population, talented faculty, and excellent educational programs offer you.

Sincerely,

Juan R. Olivarez, Ph.D.
President



OFFICE AND PROGRAM LOCATIONS BY BUILDING

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GRAND RAPIDS COMMUNITY COLLEGE

STUDENT CALENDAR 2007-2008

FALL SEMESTER 2007

Monday, September 3	Holiday (<i>all buildings closed</i>)
Tuesday, September 4	Day and Night Classes Begin
Friday, September 7	Weekend Classes Begin
Monday, October 22	End of the First 7 Weeks
Tuesday, October 23	Advising Day [<i>Day Classes are cancelled, but Biological Science Laboratory, Physical Science Laboratory, Preschool Laboratory, classes, and all evening classes are conducted.</i>]
Wednesday, November 21	College Meetings and Faculty Instructional/Professional Development NO DAY & EVENING CLASSES
Thursday-Sunday, November 22-25	Holiday (<i>all buildings closed</i>)
Tuesday, December 11	Last Tuesday Night Classes*
Friday, December 14	Last Friday Night Classes*
Friday, December 14	Day Classes End
Sunday, December 16	Weekend Classes End
Monday, December 17	Day Exams and Last Monday Night Classes*
Tuesday, December 18	Day Exams
Wednesday, December 19	Day Exams and Last Wednesday Night Classes*
Thursday, December 20	Day Exams and Last Thursday Night Classes*

WINTER SEMESTER 2008

Thursday, January 10	Day and Night Classes Begin
Friday, January 11	Weekend Classes Begin
Wednesday, February 27	End of the First 7 Weeks
Monday-Sunday, March 3-9	Winter Break (Weekend classes meet March 1 and 2.)
Friday-Sunday, March 21-23	Spring Holiday (<i>all buildings closed</i>)
Thursday, March 27	Advising Day [<i>Day Classes are cancelled, but Biological Science Laboratory, Physical Science Laboratory, Preschool Laboratory, classes, and all evening classes are conducted.</i>]
Thursday, April 24	Last Thursday Night Classes*
Friday, April 25	Last Friday Night Classes*
Friday, April 25	Day Classes End
Sunday, April 27	Weekend Classes End
Monday, April 28	Day Exams and Last Monday Night Classes*
Tuesday, April 29	Day Exams and Last Tuesday Night Classes*
Wednesday, April 30	Day Exams and Last Wednesday Night Classes*
Thursday, May 1	Day Exams
Friday, May 2	Commencement

SUMMER SESSION 2008

Monday, May 5	Day and Night Classes Begin
Monday, May 26	Holiday (<i>all buildings closed</i>)
Monday, June 23	End of the First 7 Weeks
Tuesday, June 24	Beginning of the Second 7 Weeks
Thursday-Friday, July 3-4	Holiday (<i>all buildings closed</i>)
Tuesday, August 5	Last Tuesday Day/Night Classes (for 7-week classes)*
Wednesday, August 6	Last Wednesday Day/Night Classes (for 7-week classes)*
Monday, August 11	Last Monday Day/Night Classes (for 7-week classes)*
Tuesday, August 12	Last Tuesday Day/Night Classes (for 15-week classes)*
Wednesday, August 13	Last Wednesday Day/Night Classes (for 15-week classes)*
Thursday, August 14	Last Thursday Day/Night Classes (for 7-week classes)*
Friday, August 15	Last Friday Day Classes (for 7-week classes)
Monday, August 18	Last Monday Night Classes (for 15-week classes)*
Thursday, August 21	Last Thursday Night Classes (for 15-week classes)*
Tuesday and Thursday, August 12 and 21	Exam Day for Day Classes (Faculty Member's Option)
Wednesday and Monday, August 13 and 18	Exam Day for Day Classes (Faculty Member's Option)

* All night classes meeting 2 nights per week may meet once during the exam week.

GRAND RAPIDS COMMUNITY COLLEGE ACCREDITATION AND MEMBERSHIPS

Grand Rapids Community College is accredited by the Higher Learning Commission and is a member of the North Central Association, www.ncahigherlearningcommission.org, (800) 621-7440.

ACCREDITATIONS

Associate Degree Nursing Program

Approved by the Michigan Board of Nursing.
Accredited by the NLNAC, 61 Broadway, New York, NY 10006; (800) 669-1656, ext. 153.

Automotive

Accredited by the National Automotive Technicians Education Foundation.

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.

HVAC

Accredited by the Partnership for Air Conditioning, Heating, Refrigeration Accreditation.

Law Enforcement

Approved by the Michigan Commission on Law Enforcement Standards.

Music Department

Accredited by the National Association of Schools of Music.

Occupational Therapy Assistant

Accredited by the American Occupational Therapy Association, Inc., Accreditation Council for Occupational Therapy Education.

Practical Nursing Program

Approved by the Michigan Board of Nursing.
Accredited by the NLNAC, 61 Broadway, New York, NY 10006; (800) 669-1656, ext. 153.

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
- American Dental Education Association
- American Occupational Therapy Association, Inc.
- Association for Gerontology in Higher Education
- College and University Systems Exchange
- Council on Law in Higher Education
- International Council on Hotel, Restaurant and Institutional Education
- International Tasters Guild
- Michigan Association for Foreign Student Affairs
- Michigan Association of Colleges and Universities
- Michigan Association of Collegiate Registrars and Admissions Officers
- Michigan Community College Admissions Directors
- Michigan Community College Association
- Michigan Community College Biologists
- Michigan Community College Community Service Association
- Michigan Library Consortium
- Michigan Licensed Practical Nurses Association
- Michigan Occupational Deans Administrative Council
- Michigan Student Personnel Guidance Association
- Midwest Institute for International Intercultural Education
- Midwest Institute – International Studies and Foreign Languages
- NAFSA: Association of International Educators
- National Association of Schools of Music
- National League for Nursing
- National Restaurant Association
- National Tooling & Machining Association
- North Central Association for Foreign Student Affairs
- North Central Association of Colleges and Schools
- Retail Bakers 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 faculty which encouraged the establishment of junior colleges in Michigan. In the '50s and '60s, 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, representing 53 Michigan communities, five states, a territory, and one foreign nation. In the next decade, 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 as well as liberal arts 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 about 25,000 full- and part-time students.

Today, GRCC's 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), and the Calkins Science Center. The newest addition to the campus is the Enrollment Center, which centralizes student services from across campus into one convenient location inside the main entrance to the Main Building. 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 A. Thompson M-TEC[®], located in Ottawa County, opened in Fall 2000 in partnership with the Ottawa Area Intermediate School District. Its open entry/open exit scheduling 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.

This year, GRCC's enrollment is the highest ever, with students enrolled in more than 1,600 liberal arts and occupational courses. The diverse student body includes 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 service-learning opportunities, seminars, workshops, training courses, distance learning options and other educational formats.

GRCC has 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 success of students. Throughout its 93-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, 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
- Child Development
- English
- Language and Thought
- Mathematics
- Performing Arts
- Physical Science
- Social Sciences
- Visual Arts
- Wellness

■ School of Workforce Development

- Applied Technology
- Business
- Computer Applications
- Criminal Justice
- Dental Auxiliary
- Drafting and Design
- Fashions and Interiors
- Hospitality Education
- Job Training
- Manufacturing
- Nursing
- Occupational Therapy Assistant
- Radiologic Technology
- Training Solutions

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.



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ACADEMIC INFORMATION

ENROLLMENT SERVICES

Enrollment Center

(616) 234-4000

www.grcc.edu/enroll

Admission Requirements

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 applying within five (5) years of high school graduation to submit high school transcripts with a cumulative GPA of 2.0 or higher and an American College Test (ACT) composite score of 16 or higher; all other applicants may choose to submit transcripts or complete a placement test. (See Assessment 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 Enrollment Center.
2. Submit a completed application to the Enrollment Center, Grand Rapids Community College, 143 Bostwick Avenue NE, Grand Rapids, MI 49503-3295.
3. Submit a \$20 non-refundable application fee.
4. Request that an official high school transcript (college transcript if transferring from another institution) be sent to the Enrollment Center.
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 Enrollment Center 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

(616) 234-4000

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) 234-4000.

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.

Recent high school graduates (within five years) who do not meet the minimum GPA and ACT score requirement, General Education Development (GED) recipients, and students holding a Community Education Diploma will be required to take the assessment test.

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 meeting 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 the ACCUPLACER placement score. The assignment will be made after meeting with a counselor.

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

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

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

Class Standing

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

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

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

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

New Degree-Seeking Students

New degree-seeking students will be expected to attend an orientation, evaluation/assessment, and scheduling session prior to attending classes.

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 into 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 call (616) 234-4130 and 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.

Former students are not required to reapply to GRCC.

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.

Guest Students

Students currently enrolled at other Michigan colleges or universities who wish to take Grand Rapids Community College courses under 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 Enrollment Center). GRCC requires a new Guest Application for each semester a student enrolls. Students should ask the Registrar at their current college to complete Part II and to forward it to GRCC’s Enrollment Center. Guest Students must request that a Grade Transcript be sent to their current institution.

EARLY COLLEGE

Office of Admissions

(616) 234-3567

www.grcc.edu/early_college

The Early College/Dual Enrollment program at Grand Rapids Community College is open to qualified high school juniors and seniors.

Early College applicants must:

1. Be at least 16 years of age and high school juniors or seniors.
2. Have cumulative GPAs of 2.5 or higher.
3. Be approved by their high school counselor and/or principal.
4. Currently be pursuing their high school diploma.

An application may be obtained online or from the student’s high school counseling office.

First-time students must submit the Early College application with required signatures, a one-time \$20 non-refundable application fee and a current high school transcript. It is recommended that applications be submitted by June 15 for Summer session and Fall semester and by November 15 for Winter semester.

Students are required to meet with their high school counselor and/or principal to discuss class selection. Early

College students are limited to two (2) classes each semester. Please refer to the list of Early College class restrictions.

All new Early College students are required to attend an Early College Orientation prior to the beginning of their first semester at GRCC.

After completing their first semester, Early College students are not required to reapply. They will receive information about registration prior to each enrollment period.

Early College students who wish to attend GRCC after high school graduation must complete a degree-seeking application—an additional application fee is not required.

Early College Restricted Classes:

Cooperative Education—all
 Independent Study—all
 Internships—all
 Practicums—all
 AD—all, Associate Degree Nursing program
 AT 230, Life Drawing 1
 AT 231, Life Drawing 2
 CA 160, Ice Carving Basics
 CJ 150, Introduction to Traffic
 CJ 151, Traffic Accident Investigation
 CJ 152, Police Driving Techniques
 CJ 165, Police Physical Training
 CJ 166, Police Defensive Tactics
 CJ 167, Police Physical Skills and Wellness
 CJ 175, Use of Firearms
 CJ 235, Criminal Law
 CJ 236, Procedural Law
 CJ 241, Criminal Investigation 1
 CJ 242, Criminal Investigation 2
 CJ 253, Patrol Operations 1
 CJ 255, Advanced First Aid
 CJ 257, Patrol Operations 2
 DA—all, Dental Assisting program
 DH—all, Dental Hygiene program
 DX—all, Dental programs
 EN 097, Academic Foundations English
 ES—all, English as a Second Language
 MA 003, Mathematics for College Students
 MA 104, Elementary Algebra
 MA 105, Basic Geometry
 MU—Department permission
 OT—all, Occupational Therapy Assistant
 PN—all, Practical Nursing program
 PY 101, Learning to Adjust to College
 RD 097, Introduction to College Reading
 RD 098, Introduction to College Reading
 RT—all, Radiologic Technology program

In addition to restricting particular classes to Early College students, GRCC has a policy regarding course prerequisites intended to benefit all students. Prerequisites are courses required to be taken prior to registering for a class. GRCC views prerequisites as a necessary precondition and a foundation for success. GRCC may prevent a student from enrolling

in a class if the prerequisites have not been met. Course prerequisites, if any, are listed with each course description in the *College Catalog*.

HEALTH PROGRAMS

(616) 234-4348

Individuals new to the college who are interested in enrolling in any Grand Rapids Community College (GRCC) Health programs must first apply to GRCC through the Enrollment Center.

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
- Surgical Technology with Lansing Community College

See program description for specific program entrance requirements.

INTERNATIONAL STUDENTS

Office of Admissions

(616) 234-3567

www.grcc.edu/international

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 July 1 for Fall semester and November 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 postsecondary 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. Admissions may be granted to a student who has:
 - a. Attained a minimum score of 525 on the written version of the TOEFL.
 - b. Attained a minimum score of 197 on the computerized version of the TOEFL.
 - c. Attained a minimum score of 71 on the Internet-based version of the TOEFL.
 - d. Attained a minimum score of 80 on the MELAB.
 - e. 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. GRCC requires international students to have health coverage. Students may obtain information regarding health insurance from the International Student Advisor (Primary Designated School Official).
7. The student must attend an International Student Orientation at the beginning of the first semester of his or her enrollment at GRCC.
8. GRCC does not assist students in finding housing in the area. Students must have housing arrangements prior to their arrival in the United States.
9. International students who will be transferring to GRCC must have their current international advisor complete the Transfer Form.
10. GRCC does not provide assistance in securing host families.

Academic Regulations

1. International students must carry no fewer than 12 credit hours per semester. Taking fewer than 12 credit hours per semester is considered a violation of the Bureau of Citizenship and Immigration Services (BCIS) regulations. To avoid penalties, international students may not withdraw from any classes without the International Student Advisor's approval.
2. Before international students may register for their first semester, they must take a placement test and meet with the International Student Advisor.
3. If at the end of the first semester international students have successfully completed 12 credits, they may continue regular studies. If not, they must file for reinstatement with the BCIS 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 are considered out of status.**
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 the Assistant Dean of Enrollment Services. The student may appeal any decision that he or she believes to be unjust. This appeal may be made to the Assistant Dean.

Enrollment Procedures

International students maintain their F-1 visa status if they:

1. Successfully complete 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 when due.
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.

VETERANS

(616) 234-4129

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 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 program 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.

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.
- **Prior Learning Assessment (PLA)** Grand Rapids Community College is offering credit for prior learning experiences that equate to courses taught at GRCC in the Technology area (DR, EL, ER, MN, TE, TM, TR, TI, AP, AR, EG) beginning Winter Semester 2007. If you have learning experiences you feel may meet specific course objectives, please contact the Manufacturing Apprenticeship Office at (616) 234-3670 for more information. Additionally, other departments at GRCC may be offering PLA credits; please contact those departments directly for additional information.

TO OBTAIN THE MOST RECENT TESTING INFORMATION, CONTACT:

ASSESSMENT CENTER
(616) 234-4134 or (616) 234-3413

Credit by Transfer Evaluation

Evaluation Policy

Grand Rapids Community College requires students to complete at least 15 credits of academic course work, not including Wellness, at GRCC in order to be awarded an associate's 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 Enrollment Center.

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 is awarded when courses are similar but not identical. (Example: MA 999 transferred as Math elective credit.) 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:** The 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 preceding services and a copy of the original document be submitted directly to the Registrar for consideration of transferable credit.

- **Military Credit:** The 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) Wellness 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):** The above rules apply. Educational credit is granted for extra-institutional 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
- **Child Development Associate Credential (CDA):** Grand Rapids Community College recognizes the CDA Credential by the Council for Early Childhood Professional Recognition **when earned through non-credit-bearing training**, and by Departmental evaluation grants credit for CD 105, Foundations of Early Childhood Education (3 credits). **Students earning a CDA through credit course work should have an official transcript sent to GRCC, and transfer credits will be applied accordingly.**

GRCC’s policies and procedures for awarding credit for extra-institutional 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 Student Records – Office of the Registrar 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)	EN 999	6
English Composition (With Essay)	EN 101, EN 102	6
Humanities	HU 999, EN/HU 998	6
Mathematics, College	MA 003, MA 104	8
Natural Science	BI 998, PC 998	6
Social Sciences & History	SS 999, HS 999	6

Subject Examinations

Composition and Literature

American Literature	EN 261, EN 262	6
Analyzing and Interpreting Literature	EN 281, EN 282	6
English Literature	EN 242, HU 998	6
Freshman College Composition	EN 101, EN 102	6

Foreign Languages

French, College-Level		
2 Semesters	FR 101, FR 102	8
4 Semesters	FR 101, FR 102, FR 231	12*
*Score of 62 required for 12 credits.		
German, College-Level		
2 Semesters	GR 101, GR 102	8
4 Semesters	GR 101, GR 102, GR 231	12*
*Score of 63 required for 12 credits.		
Spanish, College-Level		
2 Semesters	SP 101, SP 102	8
4 Semesters	SP 101, SP 102, SP 231	12*
*Score of 66 required for 12 credits.		

Social Science & History

American Government	PS 110	3
Educational Psychology, Intro. to	PY 251	3
History of the United States 1	HS 249	3
History of the United States 2	HS 250	3
Human Growth and Development	CD 118	4
Macroeconomics, Principles of	EC 251	3
Microeconomics, Principles of	EC 252	3
Psychology, Introductory	PY 201	3
Sociology, Introductory	SO 251	3
Western Civilization 1	HS 101	4
Western Civilization 2	HS 102	4

National Exam Science & Mathematics	Equivalent Course(s)	Credit Hours
Algebra, College	MA 110	4
Algebra-Trigonometry, College	MA 110, MA 108	6
Biology, General	BI 103, BI 104	8
Calculus with Elementary Functions	MA 133	5
Chemistry, General	CM 103, CM 104	8
Precalculus	MA 131	5
Trigonometry	MA 108	2

Business & Computer Applications

Business Law, Introduction to	BA 207	3
Financial Accounting	BA 256, BA 257	8
Information Systems and Computer Applications	CO 110	3
Management, Principles of	BA 283	3
Marketing, Principles of	BA 270	3

ACT PEP/Excelsior College

Anatomy and Physiology	BI 121, BI 122	6
Microbiology	BI 127	4
Abnormal Psychology	PY 231	3
Statistics	PY 281	4

AP-ADVANCED PLACEMENT EXAMINATIONS

Minimum score of 3 is required for credit.

AP Test Name	Equivalent Course(s)	Credit Hours
Art, Drawing: score of 3	AT 140	
scores of 4-5*	AT 140	
Art, History of	AT 105, AT 106	6
Art, Studio: 2D Design	AT 130, AT 131	6
Art, Studio: 3D Design	AT 150	3
Biology	BI 103, BI 104	8
Calculus AB	MA 133	5
Calculus BC	MA 133, MA 134	10
Chemistry: score of 3	CM 103	4**
score of 4	CM 109	5**
score of 5	CM 103, CM 104	8**
Economics-Macroeconomics	EC 251	3
Economics-Microeconomics	EC 252	3
English Language and Composition	EN 101, EN 102	6
English Literature and Composition	EN 242, EN 998	6
Environmental Science	BI 215	4
French Language	FR 101, FR 102	8
French Literature	FR 231, FR 232, FR 999	12
German Language	GR 101, GR 102	8
Government and Politics/US	PS 110	3
Government and Politics/Comparative	PS 201	3
History, European	HS 101, HS 102	8
History, U.S.	HS 249, HS 250	6
History, World	HS 295	3
Human Geography	GE 135	3
Latin Literature (Foreign Language Credit)	HU 999	8
Latin-Vergil (Foreign Language Credit)	HU 999	8
Music: Listening and Literature	MU 107	3

Music Theory	MU 101, MU 102	6
Physics B (Physics 1)	PH 125, PH 126	8
Physics C: Mechanics (Physics 2)	PH 999	5
Physics C: Electricity & Magnetism	PH 999	5
Psychology	PY 201	3
Spanish Language	SP 101, SP 102	8
Spanish Literature	SP 231, SP 232, SP 999	12
Statistics	MA 215	4

** *Students must provide portfolio to the Visual Arts Department Head for review and consideration of additional credit.*

** *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
(Faculty Developed)**

	Equivalent Course(s)	Credit Hours
ADN – Nursing, AD		
<i>Candidate's score must be 80% or higher.</i>		
<i>Departmental consent required to test.</i>		
Medical-Surgical Nursing 1	AD 125	3
Medical-Surgical Nursing 2	AD 150	3
Medical-Surgical Nursing 4	AD 175	4
Mental Health Nursing	AD 230	4
Psychosocial Nursing Foundations	AD 130	3
Community/Transcultural Nursing	AD 148	1

PN – Nursing, PN

Departmental consent required to test.

Introduction to Practical Nursing	PN 115	3
Health and Wellness	PN 117	4
Direct Care 1	PN 119	8

Business, BA

Business Word Processing 1	BA 133	2
Business Mathematics	BA 150	4

Computers, CO

Candidate's score must be 75% or better for CO exams.

Intro to Computer Applications	CO 101	2
Windows Operating System	CO 105	2

General Health, GH

Medical Terminology 1	GH 110	2
Structure & Function of the Human Body	GH 125	3

Music, MU

Intro. to Music Theory 1 and 2	MU 101, MU 102	6
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Technology, DR, EG, EL, MN, TE

Machine Trades Blueprint Reading	MN 114	2
Machine Handbook	AP 213	2
Industrial Graphics with CAD	EG 110	3
Introduction to Drafting	EG 120	2
Descriptive Geometry	EG 121	2
Introduction to CAD	DR 228	3

Technical Electricity	EL 106	4
Introductory Machine Operations	MN 119	4
Basic Arc Welding	MN 136	4
Metallurgy	MN 234	3
CNC Machine Programming	MN 235	3
Statistical Process Control	MN 249	3
Technical Mathematics	TE 103	4
Advanced Technical Mathematics	TE 104	3

ARTICULATION

(616) 234-4547 or (616) 234-3883

www.grcc.edu/articulation

Articulation is a process where students may earn college credits for certain courses they take in high school. It provides an opportunity for high school and community college courses to blend—granting equivalent college credit to students for achieving specific outcomes in identified courses within their school district.

Students who successfully complete “articulated” career and technical education programs in secondary schools that have a signed articulation agreement with Grand Rapids Community College are granted college credit for specific courses, should they decide to continue their education at Grand Rapids Community College. The amount of advanced standing credit available will depend on the specific program involved in each case and varies from two to sixteen credits. The high school instructor must evaluate the student, complete all forms and send the information to Grand Rapids Community College. Application for credits must be made within two years of graduation. If a student is transferring to another college after attending Grand Rapids Community College, the student should check with the transfer college to see if the credits are eligible to transfer.

For more information, please visit the web site at www.grcc.edu/articulation.

CAREER DEVELOPMENT SERVICES

(616) 234-3890 or (616) 234-3891

Main Building, 1st Floor, Room 105

www.grcc.edu/careerresources

Career Development Services helps individuals and groups, both on and off campus, to effectively implement or integrate career development information, principles and activities.

Basic services include career counseling, consultation and outreach assistance to prospective students, community residents and agencies, business and industry, and special groups. The office also responds to career-related requests from faculty, administrators and alumni. In addition it serves as a contact, information and resource site for Tech Prep and the Cross College Career Development Team.

Career Development Services is the GRCC Career Pathways contact/resource site, which provides information, resources and assistance related to career pathway efforts. GRCC uses the six career pathways identified by the State of Michigan. The State of Michigan identifies Career Pathways as broad groupings or “clusters” of work areas that share similar characteristics and whose employment requirements call for many common interests, strengths and competencies. Career Pathways provide

a useful framework to aid students and prospective students in making meaningful connections to the world of work. To learn about Grand Rapids Community College curriculum/pathway connections, related occupations and much more, visit the Career Development Web site at www.grcc.edu/careerresources and select Career Pathways, or contact Career Development Services.

COUNSELING AND ACADEMIC SUPPORT

Counseling and Career Center

(616) 234-3900

Room 327, Student Center

www.grcc.edu/counseling

Professionally trained and licensed counselors are available to assist students with academic advising, career counseling and personal counseling issues. While attending college, students must make many important decisions regarding courses, program selection, and choice of career.

The Counseling and Career Center assists students in achieving academic, career, and personal success. Services are confidential and free of charge to GRCC students.

Appointments must be made in advance. Walk-in services are available only at peak times during the year and are designed to answer academic questions taking 10 minutes or less.

■ Academic Advising

Students should meet with a counselor or advisor prior to their first semester and are encouraged to meet at least annually to review their academic plan. At the initial meeting, counselors and faculty advisors are available to help students understand course placement and to help plan their academic programs. **Students are responsible for their academic decisions.** Examples of these decisions include but are not limited to the following: exploring possible majors, degrees, and programs of study; and meeting course prerequisites and admission requirements of selected programs.

In addition, students desiring to transfer credits to another institution are responsible for verifying transferability. Students should keep the Records Office or Counseling and Career Center informed of any changes in their curriculum code (major). Students changing into or out of a Health curriculum code must contact the Health Admissions Office, (616) 234-4348.

■ Career Counseling

Career counseling helps students relate their academic pursuits and personal interests to career goals and objectives. This service provides an opportunity for students to explore various careers through the use of a career assessments library, workshops, multimedia and online resources, and career referrals.

■ Personal Counseling

Limited, short-term personal counseling is available to assist students in resolving personal issues that may interfere with their academic progress.

DISABILITY AND OCCUPATIONAL SUPPORT PROGRAMS

Room 368, Student Center

Grand Rapids Community College administers programs to provide academic assistance to students who meet certain eligibility requirements:

- **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 the Americans with Disabilities Act).

- **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.

TRiO Programs

Room 368, Student Center

TRiO Programs promote educational opportunities for low-income, first-generation students and encourage them to enter college, graduate and move on to participate more fully in their economic and social lives. TRiO Programs are federally funded by the U.S. Department of Education.

- **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.

Academic Tutorial & Testing Services

(616) 234-4149

2nd floor, Learning Center

The Academic Tutorial and Testing Service is designed to help students who may need assistance with their course work or who wish to earn credit by examination or have other assessment needs.

- **Testing Services**

(616) 234-3413

Room 358, Student Center

Grand Rapids Community College provides an opportunity for students to earn college credit through credit-by-examination testing. Other tests administered by Testing 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.

- **Tutoring**

The following subject-centered tutorial labs are available on a walk-in basis: Biology; Mathematics; Health; Advanced Math, Physics, and Chemistry; Writing and Language; Business and Accounting; Computers; and Auto CAD/Pro-E/Mechanical Desktop. *Locations of the various labs are listed in the Tutorial Labs section.* Academic Tutorial and Testing Services will also try to arrange for a student tutor to help a student understand course work and class assignments. Enthusiastic and encouraging staff will provide students with academic support. All current GRCC students are welcome, and all of the services are free. The Academic Tutorial and Testing Services can make a difference in helping students achieve academic and personal success.

- **Tutorial Labs**

Many subject-centered tutorial labs are available to GRCC students on a walk-in basis. Professional and student tutors assist students in completing homework assignments, and they answer questions about class lectures or readings assigned in textbooks. A list of the various tutorial labs and locations follows.

Lab	Location
Physical Sciences and Calculus 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 Cook
Computer-Assisted Language Learning Lab	. . 513 Cook
Health Education Learning Lab 307 Cook
Mathematics Computer Lab 112 Cook
Mathematics Tutorial Lab 111 Cook
Cook Hall Computer Lab 512 Cook
Writing Tutorial Lab 512 Cook

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. After the initial payment, any dropping and adding of credit hours 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 prevented and 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. The Web at www.grcc.edu may also be used for payments using MasterCard or Visa.

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 2007

If you register for classes by the end of business on August 7, 2007, your tuition and fees are due on August 8, 2007. If you register and/or add classes on or after August 8, you must pay at the time of registration.

Winter 2008

If you register for classes by the end of business on December 4, 2007, your tuition and fees are due on December 5, 2007. If you register and/or add classes on or after December 5, you must pay at the time of registration.

Summer 2008

If you register for classes by the end of business on April 8, 2008, your tuition and fees are due on April 9, 2008. If you register and/or add classes on or after April 9, you must pay at the time of registration.

Resident Status

At the time of publication, the GRCC Residency Policy was under review. Please refer to www.grcc.edu/tuition after June 1, 2007 for the official residency policy.

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.

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 verify residency information annually. 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

At the time of publication, the tuition and fee rates for the 2007-2008 academic year were not approved by the GRCC Board of Trustees. Please refer to www.grcc.edu/tuition after April 1, 2007, for the most current tuition and fee information.

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 (telecourse, online, etc.) 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 student's contact hours.
- **Technology Fee**
A non-refundable technology fee is charged each semester based on the student's contact hours.

Refund Policy

All refunds of tuition and fees will be based on a student's initiating the drop of a class(es) via the Web or by going in person to the Enrollment Center. 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 the class 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 drop is initiated by the student. 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 electronically send the SAR data to the GRCC Financial Aid Office. 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. Contact a Learning Corner for 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, 2007, 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

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 \$680,000 to over 850 students in the 2006-2007 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 2007-2008 Foundation scholarships awarded from the Financial Aid Office are available from the Financial Aid Office beginning January 2 and are due by March 15, 2007. 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. Booklets can be accessed at www.grcc.edu.

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 credit-worthy 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 percent 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 6.8 percent. 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. 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 is 8.5 percent, 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 2006-2007. 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.

Federal Academic Competitiveness Grant—These federal funds are available to students during their first two years of college. Qualifications include U.S. citizenship, full-time enrollment eligibility for a Federal Pell Grant, and completion of a rigorous academic program in high school. First-year awards are \$750; second-year awards are \$1,300.

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), have been 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 a 6.8 percent 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 \$3,500 for the freshman year and \$4,500 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 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 8, 2007.

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:

- Thomas Kindel
- Minority Student Loan
- Special Needs Loan
- Mary Dively

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 24 hours of tuition each academic year and some 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 percent 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 GRCC 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 14 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 2006-2007 were:

Room/Board	\$3,486
Books/Personal	\$1,422
Transportation	\$1,242

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 percent 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

Grand Rapids Community College (GRCC) offers a variety of options for registration. The most current open class sections are available on the Web 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. Students may register in person at the Enrollment Center, first floor, Main Building. Instructions and timelines for registration are included in course schedule booklets published annually. The booklets are available in several locations on campus. They are also available at www.grcc.edu.

Returning Students

Students already enrolled in classes at 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 with Student Records – Office of the Registrar in 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, or 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 curricula 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

Students who plan to transfer to a senior institution where they will pursue the Bachelor of Music in education, performance, Recording Technology, Music Industry Management, or Music Therapy should contact the Music Department. Meeting with the Music Program Director will allow them to learn more about the options available to music majors at Grand Rapids Community College.

Associate in Nursing

An Associate in Nursing degree is one way to become a registered nurse. After receiving the degree, students are eligible to take the NCLEX-RN 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 with MACRAO

Students who plan to transfer to colleges and universities pursuing studies in the mathematics or science areas, including many pre-professional medical majors, may choose to complete an Associate in Science with MACRAO. Students should consult a Counselor in the Counseling and Career Center for additional information and follow prescribed transfer plans for specific majors and specific institutions found in the GRCC Transfer Guide.

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's 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 the other institution. 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 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	PL
EN (any 200 level)	PO 105
Foreign Language (except Occupational Spanish)	COM
HU	SL
	TH 248

■ Group II – Social Sciences:

AN	HS
CJ 110, 111, 140, 235, 236, 237	PS
EC	PY
GE	SO
GO 203, 261, 262, 263	SS
	SW 101, 102

■ Group III – Natural Sciences and Mathematics:

Note: Courses identified as “non-lab” cannot be used to satisfy “laboratory science” requirements. Check Course Descriptions for additional lab and non-lab options.

AS 102 (non-lab)	EL 132
AS 103	GE 132
BA 150, 254 (non-lab)	GL
BI (BI 125, 126, 171 & 232) (non-lab)	MA (any courses except MA 003) (non-lab)
CM (any courses except CM 100 and CM 102)	PC
CO 124, 127, 225, 227 (non-lab)	PH
	PY 281 (non-lab)
	TE 103, 104 (non-lab)

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 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 required.

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 212 and 282		PH 125 and 126
CM 236, 237 and CM 238, 239		

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:

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: COM 131 (suggested) or COM 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

- **Wellness Credits–1**
 - **Elective Credits–7:**
One additional WE activity can be used as an elective.
- 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 also 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 course 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 EN 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, COM 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 course 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 (see General Requirements section), 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 EN 101 and EN 102.

Group I – Humanities :

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

Group II – Social Sciences:

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

Group III – Natural Sciences and Mathematics:

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

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

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 skills, personal skills, and diversity skills. General Learner Outcomes are embedded in courses throughout the curriculum. **Assessment of General Learner Outcomes became part of graduation requirements for students enrolling for the first time in Fall 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 skills** (Multicultural awareness, both local and global.)

MACRAO AGREEMENT

The Michigan Association of Collegiate 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* and Mathematics. | 8 |

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

Four-year colleges and universities that 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
 Siena Heights College*
 Spring Arbor College
 Western Michigan University

* *Four-year colleges and universities that 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 Office of the Registrar at GRCC or from the senior institution to which a student expects to transfer.*

Four-year colleges and universities that 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.

Honor Points		Honor Points	
Grade	per Credit Hour	Grade	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 grade can be changed other than the "I" 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" (V) 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 instructor 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 instructor 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)

Students may drop a class and receive a “W” until the date of 70% of class completion, as noted on the instructor’s class roster. Students must initiate all drops, using “My Student Center” or in person at the Enrollment Center.

Instructors may assign a NS grade after 10% of class completion or assign WP or WF grades after 70% of class completion. Instructors may not assign a “W” as a grade. Students will not be able to initiate a drop (W) and receive a “W” during the final 30% of the class; they will receive, based upon graded and missed work, the grade they have earned (A, B, C, D, E, WP, WF, NS). There is no penalty to the student receiving a WP, WF, or NS in the Grand Rapids Community College grading system. Transfer institutions may have policies governing the impact of W, WP, WF or NS grades at their institutions.

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 the preceding 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. If an instructor does not submit an Incomplete Grade Form or complete a grade change, the “I” will default to a grade of “E” one year from the end date of the class.
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. Student Records – Office of the Registrar will mail grades upon request. 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.

Prerequisites

Prerequisites are courses that are required to be taken prior to registering for a class (see page 134). Prerequisites are a necessary foundation for student success. GRCC may prevent a student from enrolling in a class if the prerequisites have not been met. If you have questions regarding prerequisite enforcement at GRCC, please visit www.grcc.edu/prerequisites.

Course Repetition

Students may repeat courses. Both the original course grade and the repeated course grade are entered into 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 individual faculty members will recognize that athletic events, class trips, trips abroad, student organization activities, and the like are a necessary and desirable part of life at GRCC and that all faculty members will extend to each other the professional courtesy of permitting students to miss their classes as these activities dictate. Students must understand, nevertheless, that they are responsible for *all* class work missed under such circumstances.
4. The College makes no distinction between “excused” and “unexcused” absences. If students are not present in a class in which they are enrolled, they are simply absent, regardless of the reason.

Academic Honesty

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

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

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

ment 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/Executive Vice President for Academic and Student Affairs.

- 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. (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 Enrollment Center or online at www.grcc.edu; or they may write to Student Records – Office of the Registrar giving dates of attendance, Social Security number or student ID number,

date of graduation, 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.

Name Changes

A student name can be changed with a driver's license **OR** court papers and photo I.D. Student workers must do this at the Payroll Office; employees at Human Resources. Students receiving a diploma or certificate may only use only legal name or variation thereof in accordance with State and Federal regulations. Students are to submit their preferred name when applying to graduate

STUDENT RIGHT TO KNOW

Grand Rapids Community College (GRCC) is pleased to provide the following information regarding the institution's graduation/completion and transfer-out rates. The information is provided in compliance with the Higher Education Act of 1965, as amended. The rates reflect the graduation/completion and transfer-out status of students enrolled at GRCC for the first time during the Fall 2002 semester and for whom 150 percent of the normal time-to-graduate/complete had elapsed.

During the Fall semester of 2002, 2,005 first-time, full-time, certificate- or degree-seeking undergraduate students entered Grand Rapids Community College. After three years (i.e., as of August 31, 2005), of the 2,005 students (0.15 percent or three students were exempt according to exclusions allowed by the federal government), 13 percent (261) had graduated from GRCC with an associate's degree or certificate. Twenty-three percent (471) of these students transferred to other institutions of higher education but did not receive a degree from GRCC. The percentage of the students entering in Fall 2002 who graduated/completed and/or transferred to other institutions of higher education was 30.4 percent (609). Twenty-four percent (327) of the students in this group were still enrolled at GRCC as of August 31, 2005. The remaining 47 percent (943) of the first-time, full-time, degree-seeking students who entered in 2002 either transferred out and could not be tracked or are no longer enrolled at GRCC.

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

- Graduation/completion and transfer-out rates are based on a cohort of students who took three years to complete a two-year degree or one and a half years to complete a one-year degree.
- Graduation and transfer-out rates do not include students who left school to serve in the armed forces, were on official church mission, or were in the foreign service of the federal government. Students who died or were permanently disabled are also excluded.
- The transfer-out rate sent to the National Center for Educational Statistics (NCES) is included in the annual Integrated Postsecondary Education Data System (IPEDS) graduation Rate Report. Grand Rapids Community College contracts with the National Student Clearinghouse to obtain an estimate of the number of student transfers from GRCC to other institutions of higher education.

- The graduation rate for community colleges has been tracked since 1999. Over that 4-year period, Grand Rapids Community College has averaged a 16 percent graduation rate and a 23 percent transfer-out rate.

Questions or requests for more information about 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 (WIA), Section 122, the College will be using student Social Security numbers 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 (SSNs) to the College.

The College plans to use student SSNs to gain access to individual wage records and to compile required WIA and Perkins Act reports. These reports will assist the College in improving 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 a student's 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 Privacy Statement.

Campus Crime Report

The Campus Crime Report for the last year reported is available at the Campus Police Office and at the Dean of Student Affairs 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, under the heading “Student Code of Conduct.” The Grand Rapids Community College Policy on Concealed Weapons is also available for review online at www.grcc.edu.

Copyright

“Copyright is a constitutionally conceived property right, which is designed to promote the progress of science and the useful arts by securing for an author the benefits of his or her original work of authorship for a limited time. This statute balances the author’s interest against the public interest in dissemination and reproduction of information” (as stated in the GRCC Copyright Policy). This means that unless you wrote it, painted it, created it, etc., it is against the law for you to claim any part of an article, Web site, sculpture, movie, dance, etc., as your own work. If you want to use some part of another person’s work, you must give him/her credit for that content. In some cases, you must get permission from the copyright holder.

Right to Use Photographs

Grand Rapids Community College (GRCC) reserves the right to use photographs, taken either in class or on the GRCC campus, of GRCC students and/or their art, for the purposes of instruction, advertising and promotion of GRCC and its programs. Students, or parents of students who are minors, who do not wish to comply with this policy must notify the Student Records Office in writing when they register.

EQUAL EMPLOYMENT OPPORTUNITY

(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.

* *School days are Monday through Friday while classes are in session.*

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, Human Resources Department, (616) 234-3972.

If you have concerns or questions and are unsure of whom to call, please call the Director of Human Resources/Labor Relations & EEO, (616) 234-3972.

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.

* *School days are Monday through Friday while classes are in session.*

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.

Please refer to www.grcc.edu/grievance for the official policy.

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**, www.grcc.edu.)

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 College 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 Associate Director of the Diversity Learning Center; 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 proof of delivery 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, 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/Executive Vice President for 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/Executive Vice President for Academic and Student Affairs shall have five (5) school days* to render a written decision to the student. The Provost'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 while classes are 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 Communications Department, College Park Plaza.

Children in the Classroom and on Campus

GRCC prohibits bringing children to class OR leaving them unattended on campus, such as in halls, the Library, the Student Center, or computer labs.

Children accompanying visitors, employees, or students of Grand Rapids Community College must be under the constant supervision of a responsible adult while on GRCC property or on the site of any approved off-campus class or other GRCC event.

Please refer to www.grcc.edu for the official policy.

RESOURCES

ACADEMIC SERVICE LEARNING CENTER

(616) 234-4162

Room 59, G2 Main Building

The Academic Service Learning Center offers:

- Integrated service-learning options within academic courses. (Some courses carry academic service learning options. Please check with the Academic 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
- Curriculum-Based Alternative Break Trips

APPLIED TECHNOLOGY CENTER

ATC Information Office

(616) 234-3600

- Computer Applications Department
- Drafting and Design Department
- Manufacturing Department

Workbased Learning–Apprenticeship Program

(616) 234-3670

Hospitality Education Department

(616) 234-3690

Training Solutions

(616) 234-3600

Continuing Education

(616) 234-3400

Ferris State University/Grand Rapids

(616) 451-4777

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 thousands of individuals each week.

The Applied Technology Center is a joint partnership between Grand Rapids Community College and Ferris State University/GR campus.

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

Leslie E. Tassell M-TEC® (Grand Rapids)

Information

(616) 234-3800

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. The facility includes 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
- **Language Arts**
 - Computer Laboratory
 - Language Learning
 - Reading-Writing Lab
- **Library and Learning Commons**
 - General Applications
 - Access to GRCC-Licensed Databases

- **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
 - Automotive Technology
 - Computer Aided Design (CAD)
 - Computer Aided Manufacturing (CAM)
 - Computer Numerical Control (CNC)
 - Computer Technology and Repair
 - Drafting
 - Electronics
 - Hydraulics
 - Metallurgy
 - Plastics and Injection Molding
 - Pneumatics
 - Welding
- **Job Training**
 - Auto Mechanics
 - Computer Applications
 - Construction Trades
 - Machine Tool Operation
 - Welding

JOB PLACEMENT CENTER

(616) 234-4170

Room 103, Main Building

The GRCC Job Placement Center offers assistance for employment needs. All services are provided free to current and former students. A variety of personalized services are offered to address numerous kinds of employment needs. These include:

- Employment opportunities in the community
- Applicant interviewing and referral
- Resume and interview assistance
- On-campus recruiting by employers
- Job hunting skills development
- Computer workstations for resume and cover letter development
- On-campus employment opportunities (current students only)
- Online job bank at www.grcc.edu/jobplacement.

LIBRARY AND LEARNING COMMONS

(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 and Learning Commons (LLC) houses:

- The GRCC LLC print Reference Collection (5,100+ volumes)
- The Reference and Circulation Desks
- The Reserved Reading collection
- 52 terminals to access the Internet and the LLC home page (the GRCC automated Library catalog, over 60 licensed electronic databases and indexes with access to over 10,000 full-text journals and over 30,000 electronic books, including reference materials)
- Audiovisual equipment for listening to music CDs, language CDs, and audiocassette tapes; and for watching telecourses and other videos and DVDs.
- Typewriters
- Duplication of non-copyrighted audiocassette tapes
- New book display
- Book/magazine sale display

SECOND FLOOR of the LLC houses:

- The print circulating book collection (67,000 volumes)
- The print and microformat periodical collection (over 800 titles)
- Interlibrary Loan office
- Information Literacy training room
- 10 computer terminals with access to LLC holdings
- Tutoring Services

Copy machines and individual and group study areas are located on each floor.

LLC staff members offer Information Literacy classes several times during each semester. To sign up for a 50-minute class on how to find, use, and evaluate print, film, and electronic information, call the Reference Desk, (616) 234-3868.

STUDENT LIFE

(616) 234-4160

Student Life is located on the first floor of the Student Center, provides student services as well as educational and cultural programming for GRCC students. Staff members answer questions, provide information about the College, and work closely with the College's student organizations. Services include:

- RAIDER Card
- Campus locker rentals
- Ticket outlet for campus and community events
- Daily and monthly bus passes from Interurban Transit Partnership
- GRCC Student Handbook/Planner
- Voter registration
- Campus Orientation and information
- DASH and Premium parking
- Area rental housing listings
- Student organization information
- FAX and copy services
- Campus leadership opportunities

RAIDER Card

The Raider Card is your official GRCC photo identification and will allow you discounted campus parking, access to the Gerald R. Ford Fieldhouse, and the ability to purchase items at Student Life.

Keep your Raider Card with you at all times—it will allow you to easily conduct business at GRCC.

If you lose your card or think it has been stolen, report this matter immediately! You can do this in person at Student Life, the Campus Police Office, online at www.grcc.edu/raidercard, or by calling (616) 234-3080.

Register to Vote

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

TELEVISION AND MEDIA SERVICES

Available through Learner Resources and Technology Solutions (LRTS)

(616) 234-3830

Television and Media Services staff support learning by providing a variety of television and media production services for GRCC faculty, staff and students. The staff provides services and support for television and multi-media production, broadcasting, and duplication; provides technical services for teleconferencing, distance learning, and media events; coordinates the College's Telecourse Program; manages all distance-learning video systems and classrooms located on and off campus; and is licensed by the City of Grand Rapids to operate the "College Channel" seen on Comcast cable Channel 28. The staff also provides technical assistance and support for classroom use of AV equipment and the multimedia systems located in classrooms and auditoriums on campus. Call the LRTS Help Desk at (616) 234-3688 for assistance.

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 and Human Resources departments as well as in the office of the Executive Vice President for Business and Financial Services.

Students have the opportunity to participate in:

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

THE BOB AND ALEICIA WOODRICK 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 learning, working, 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 16 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. Students can complete 100 percent of their course work for a bachelor's or even a master's degree without leaving Grand Rapids and without disrupting either their career or personal life.

This partnership allows the student to:

- Take Ferris classes on the GRCC campus in the Applied Technology Center.
- 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.

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 schedule an appointment with an advisor to complete an unofficial evaluation of credits completed at GRCC.

Bachelor's Degree Partnered Programs:

- Allied Health Education/Secondary Education
- Business Administration
- Business Administration—Culinary
- 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—R.N. to B.S.N.

- Product Design Engineering Technology
- Quality Engineering Technology
- Technical Education/Secondary Education

Associate's Degree Programs

- Building Construction Technology
- Medical Records Technology
- Nuclear Medicine
- Respiratory Care

Professional Development Certificate Programs

- Advanced Construction Management
- Billing & Coding
- Construction Administration
- Philanthropic Education
- Philanthropic Studies
- Phlebotomy
- Quality Technology

Master's Degree Programs

- Business Administration (MBA)
- Career and Technical Education
- Criminal Justice Administration
- Curriculum and Instruction
- Information Systems Management
- Nursing

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FLEXIBLE LEARNING OPTIONS

Distance Learning

(616) 234-3845

Information about online, hybrid, telecourses, live Cable TV, and interactive TV courses can be found at www.grcc.edu/distance. Students can also e-mail distancelearning@grcc.edu.

Online Courses:

Students will need to access online courses from the campus network or through their own Internet service provider and computer. Online courses are delivered over the Internet, with very few on-campus meeting times. In the **Schedule of Classes**, online classes are designated as “Internet” under the column heading “TYPE.” Students use a system called “Blackboard” (www.bb.grcc.edu) to take these courses. For the latest class availability, go to “My Student Center” at www.grcc.edu/studentcenter. 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 www.mccvlc.org.

Hybrid:

A hybrid course is an online course that includes scheduled classroom instruction. Scheduled classroom instruction does not exceed fifty percent of the contact hours for the course. Students will need to access the online component from the campus network or through their own Internet service provider and computer. In the **Schedule of Classes**, hybrid classes are designated as “Hybrid” under the column heading “TYPE.” Students use a system called “Blackboard” (www.bb.grcc.edu) to take these courses. For the latest class availability, go to “My Student Center” at www.grcc.edu/studentcenter.

Telecourses:

A telecourse is a complete instructional course package that includes video programming, textbooks, study guides, several on-campus or online sessions with a professor 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 or viewing in the GRCC Library and Learning Commons. 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. In the **Schedule of Classes**, telecourses are listed as “TV” under the column heading “TYPE.”

Live Cable TV Courses:

Live cable classes are taught on the GRCC campus from one of the distance learning rooms and delivered via Comcast Cable Channel 28, the College Channel. In the **Schedule of Classes**, they are designated as “Live Cable” under the column heading “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 the 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 and Learning Commons 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 Patrick A. Thompson M-TEC® and to high schools for Dual Enrollment students. The classes are interactive because there are students at more than one site. In the **Schedule of Classes**, they are designated as “ITV” under the column heading “TYPE.”

Distance learning rooms are equipped with advanced technology, using multiple cameras, monitors, CD-ROM, computers, and VCRs—all of which are controlled from an instructor’s console. An increasing number of instructors are also incorporating online learning components to further augment communications and interaction.

ITV Class Locations:

- Grand Rapids: GRCC Learning Resource Center (LRC), Downtown Campus
- Ottawa County: Patrick A. 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 GRCC Library and Learning Commons. 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.

HONORS PROGRAM

(616) 234-4413

www.grcc.edu/honorsprogram

The Honors Program provides enriched experiences in designated Honors courses, seminars, contract courses, research, study abroad (see Irish Foreign Studies Program), 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 3.5 GPA. 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 at (616) 234-4413.

HONORS RECOGNITION

Dean's List

The Dean's List is compiled for the Fall and Winter semesters. Full-time 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 Recognition

The Delta Pi Alpha Honor Recognition honors those students graduating with superior scholastic achievement.

Recipients are selected from the top five (5) percent of the graduating class for the 2007-2008 academic year. To be considered for the honor, students must file a graduation audit by February 15, 2008, and complete graduation requirements by the end of Summer session 2008. Letter grades X, N, I, E on the student transcript on this date will disqualify students. For more information, contact the Dean of Student Affairs Office at (616) 234-3925.

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 Life or from the Phi Theta Kappa advisor via e-mail: ptk@grcc.edu.

INTERNATIONAL STUDIES INITIATIVE

(616) 234-4879

“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 (ISI) is committed to expanding opportunities for students and faculty wishing to travel or study abroad.

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 faculty and staff at GRCC who would like to develop or become involved with study and/or travel abroad, as well as faculty who wish to internationalize their curriculum.

LEARNING CORNERS

E-mail: learningcorner@grcc.edu

Leslie E. Tassell M-TEC® – West Side

(616) 234-3170

622 Godfrey Avenue SW
Grand Rapids, MI 49503

Wealthy Street

(616) 234-3040

1154 Wealthy Street SE
Grand Rapids, MI 49506

The Learning Corners are collaborative initiatives that provide the community with learning environments offering high quality general education, literacy instruction, English proficiency, English as a Second Language (ESL) and General Education Development (GED) preparation. These centers allow community residents the opportunity to access and explore the programs and services of Grand Rapids Community College in a convenient, familiar and non-threatening location.

As the community's college, GRCC is committed to providing leadership, activities and services that meet community learning needs in unique ways.

The goals of the Learning Corners are to:

- Help individuals obtain GED certification, acquire English proficiency, and continue to achieve their educational and employment needs.
- 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 that enable them to resolve barriers to success.
- Facilitate linkages to and between organizations and institutional systems to enhance community vitality in their neighborhoods.

The following activities at the Learning Corners are focused on four areas—Education; Employment and Career Preparation; Individual and Family Support; and Neighborhood Vitality:

- ESL Instruction
- GRCC College Credit Classes
- GED Preparation
- Computer Training for Adults
- Employability Assistance
- Urban Gardening
- Money Management
- Grandparents Raising Grandchildren
- College Readiness
- Reading Clubs
- Self-Support Services:
 - Time management
 - Self-awareness
 - Communication
 - Parenting
 - Relationships
 - Resource management
 - Health and wellness

OLDER LEARNER CENTER

(616) 234-3483

Rooms 215-217, Calkins Science Center

The Older Learner Center offers adults 45 and older opportunities for life-long learning and life enrichment. These include a Computer Club; Senior Health Club, and Health Education Programming; Life History Club; Grandparents Raising Grandchildren Educational Support Group; and Life-Long Learning Network initiative. The Older Learner Center has produced *Successful Aging*, an award winning television program that is distributed nationally on video; 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/support role in the Kent County Caregiver Resource Network and the 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

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 is based on the number of hours the student can commit to the project. Students who are not interested in participating in a play for credit may become involved on an extra-curricular basis.

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.

Dance

The GRCC Theatre Department 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

GRCC students with valid IDs are allowed discount tickets 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 Life Office and low student rates for all performances.

Actors' Theatre, Jewish Theatre Grand Rapids, and Heritage Theatre Group

These three community-based theatre groups produce award-winning plays on campus at Spectrum Theater. They all welcome and encourage student participation both as performers and backstage technicians. Casting is open to anyone in the Grand Rapids community and beyond.

TRAINING SOLUTIONS

Customized Training for the Business Community

(616) 234-3600

Training Solutions serves its customers by providing cost-effective, results-oriented workforce training and services.

Training programs are developed to meet the individual employer's needs identified through assessment and corporate learning plans. Training Solutions offers training through a variety of learning methodologies: instructor-led, self-paced, distance learning, and hands-on technical instruction. Training can be held at the employer's site or at one of three GRCC world-class workforce development facilities.

Training Solutions provides services in areas such as the following:

- **Employee Skill and Job Assessment**
- **Needs Assessment and Evaluation**—determining training needs with respect to organizational impact and return on investment.
- **Customized Apprenticeships**
- **Computer Applications**—keyboarding; all levels of Microsoft Office Applications (Access, Excel, Word, PowerPoint, Project); Dreamweaver, SSPS, SAS, Goldmine.
- **Information Technology**—High-end IT training in the latest technologies, including Microsoft server, reporting, and portal technologies; Linux; Oracle.
- **Quality Systems Development**—APQP, FMEA, PPAP, DOE, GD&T, all applications of ISO/TS/QS, Mistake Proofing/Zero Defect, MSA, Process Capabilities Analysis, QFD, Quality Management Systems Documentation, SPC, Metrology, and Calibration.

- **Manufacturing Skills Development**—plastics (including RJG technologies), robotics, machine tool, math, blueprint reading, welding, and metal forming.
- **Organizational Development Skills**—business plans, strategic plans, project management, manufacturing principles, workplace organization, train the trainer, team building, customer service, supervisory and leadership training, Supply Chain Management, problem-solving, and communications.
- **Lean Manufacturing, Six Sigma, Lean Office, and Lean Administration**
- **Consulting Services**—internal auditing, problem solving, coaching, program design, and strategic planning.

For more information regarding customized classes, call the Training Solutions Office at (616) 234-3766 or visit www.learning.grcc.edu/ec2K.

WORKBASED LEARNING

Construction Trades, Apprenticeship Training (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 GRCC's Leslie E. Tassell M-TEC® for an established sequence of trade-related courses or can 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, visit www.grcc.edu, then select "Departments/Academic Departments/Construction Trades."

Cooperative Education (616) 234-3660

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-time 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.

Manufacturing Trades Apprenticeship (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.

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 23-24.

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 fulfills 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 referred to as the MACRAO and consists of 30 credits. The MACRAO is discussed in detail on page 27.

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 may also be transferred to four-year 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 for which a student enrolls 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 degree or doctorate in a particular field.

Help in choosing a major can be found at the Counseling and Career Center on the third floor of the Student Center. The Counseling and Career Center offers individual appointments, 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:

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

Prerequisite: Completion of BI 121 with a minimum of C-. Biology 122 is the second of a two-semester course sequence. This course covers a structural and functional approach to human biology with an emphasis upon the circulatory, lymphatic, respiratory, digestive, urinary, endocrine and reproductive systems. 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. Lab fee.

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

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

Example of Course Schedule:

Schedule Legend at Top of Each Column

COURSE NUMBER & TITLE		Department/Program		Course Number & Title					
CODE	TYPE	CR	CH	DAYS	TIMES	INSTRUCTOR	LOCATION	START/END	***
BIOLOGY									
BI 122 Human Anatomy and Physiology 2									
2661	Lecture	4	5	TTh	09:40-11:10AM	Krieger, P	SCIE204	09/03-12/19	
2662	Lab	0		Th	12:30-02:40PM	Krieger, P	SCIE339	09/05-12/19	
2663	Lab	0		T	12:30-02:40PM	Krieger, P	SCIE339	09/03-12/19	

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

Accreditation

If a school is accredited, it has achieved certain standards 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. Each program seeking accreditation performs a self-study and hosts a site visit by a team from the specialty agency. A program that has achieved programmatic accreditation meets national standards for its field. Sometimes the professional exam or certification for a particular field requires the potential professional to have 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 and Career 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 Student Records – Office of the Registrar that an official transcript 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 more likely to transfer than otherwise. However, most receiving institutions have certain grade requirements for transfer, and they have the right to reject credits they don't recognize. A college of arts and sciences might not be willing to accept a course in a field they don't have—although some colleges will accept “unrecognized” credits as elective credits. 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. The sequence of these courses is termed *general education*. General education courses serve to broaden the intellectual background of the average student regardless of the specific subject area in which the student may be interested.

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 requirements regarding acceptance of the MACRAO may differ from school to school, 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 while still at GRCC.

Students are responsible for their own 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 of 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 25. For **MACRAO Agreement requirements**, see page 27.

■ Group I – Humanities:

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

■ Group II – Social Sciences:

AN	HS
CJ 110, 111, 140, 235 236, 237	PS
	PY
EC	SO
GE	SS
GO 203, 261, 262, 263	SW 101, 102

■ Group III – Natural Sciences and Mathematics:

Note: Courses identified as “non-lab” cannot be used to satisfy “laboratory science” requirements. Check Course Descriptions for additional lab and non-lab options.

AS 102, 103	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
CO 124, 127, 225, 227 (non-lab)	PH
GE 132	PY 281 (non-lab)
	TE 103, 104 (non-lab)

Colleges/universities for which transfer information is available are as follows:

Albion College
Alma College
Aquinas College
Calvin College
Central Michigan University
Concordia University
Cornerstone University
Davenport University
Eastern Michigan University
Ferris State University
Grand Valley State University
Historically Black Colleges and Universities
Historically Hispanic Serving Institutions
Hope College
Kettering University
Lake Superior State University
Michigan State University
Michigan Technological University
Northern Michigan University
Northwood University
Oakland University
Olivet College
Palmer College of Chiropractic
Saginaw Valley State University
Siena Heights University
Spring Arbor University
University of Detroit Mercy
University of Michigan
University of Phoenix
Wayne State University
Western Michigan University

Transfer information is available in the *Transfer Guide* in the following areas:

Accounting/Business
 Advertising/Public Relations
 Anthropology
 Apparel Merchandising and Design
 Architectural Illustration
 Architecture
 Art
 Art and Design
 Athletic Training
 Aviation Flight Science
 Behavioral Science
 Biology
 Bio-Psychology
 Biotechnology
 Broadcasting
 Business/Business Administration
 Cell & Molecular Biology
 Chemistry
 Chemistry-Forensics
 Clinical Laboratory Sciences
 Communications
 Computer Information Systems
 Computers & Mathematical Science
 Computer Networking/Network Security
 Computer Science
 Conservation
 Construction Management
 Criminal Justice
 Culinary Management
 Dietetics
 Digital Animation and Game Design
 Economics
 Education
 Engineering
 English
 Environmental Studies
 Facility Management
 Family Studies
 Fashion Merchandising
 Film and Video
 Fisheries and Wildlife
 Food Service Administration
 Forestry
 Geology
 Health Administration/Public Health
 Healthcare Systems Administration
 History
 Hotel Management
 Industrial Technology
 Interior Architecture
 International Relations
 Journalism
 Legal Studies
 Liberal Arts and Liberal Studies

Management
 Mathematics
 Medical Imaging
 Medical Records Administration
 Modern Language
 Mortuary Science
 Music and Music Education
 Natural Resource Management
 Nursing
 Occupational Safety and Health
 Occupational Therapy
 Optometry
 Pharmacy
 Philosophy
 Photography
 Physical Therapy
 Physician Assistant
 Physics and Applied Physics
 Political Science
 Pre-Dental/Pre-Medical
 Pre-Law
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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 the humanities and to the performing, visual, and literary arts. These careers are interesting to people who value creativity who have personal traits that emphasize feelings and emotions; for example:

- Creativity
- Aestheticism
- Imagination
- Idealism
- Expressiveness
- Independence
- Non-Conformity

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

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



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:

- Studio/general fine arts course listing: 2-D, 3-D, photography areas
- Studio/art history course listing
- 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 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



ART AND DESIGN: (Code 251)

Associate of Fine Arts in Fine Arts

AT Studio Support: 15 credits foundation/basic studies are required

AT 130 Two Dimensional Design 1: Principles (3/6)

AT 131 Two Dimensional Design 2: Color (3/6)

AT 140 Drawing 1 (3/6)

AT 141 Drawing 2 (3/6)

AT 150 Three Dimensional Design (3/6)

General Fine Arts Emphasis: 16 credits required

(all courses are 2/4)

4 credits required: AT 230 + 231 Life Drawing 1 and 2 (2/4)

6 credits Painting: AT 214 + 215 Painting 1 and 2 (2/4)

AT 218 Mixed Media (2/4)

4 credits Pottery: AT 222 Introduction to Pottery and

AT 223 Pottery Throwing (2/4)

2 credits choose one: AT 200 Watercolor 1 (2/4)

AT 240 Jewelry (2/4)

Art/Design History: 9 credits required (concurrently completes 6 credits of 8 credits total of MACRAO Humanities requirement).

AT 105 History of Art Before 1400 (3/3)

AT 106 History of Art Since 1400 (3/3)

AT 271 Modern Art (3/3)

General Studies (MACRAO) and Electives: 25 credits required for General Education/MACRAO

1 credit Wellness (WE)

6 credits at least English composition

8 credits Humanities (Group I Distribution):

6 credits completed by required AT 105 and 106

8 credits Social Science (Group II Distribution):

3 credits completed by PS 110 (required)

8 credits Science-Mathematics (Group III Distribution)

one course must be a lab

0 credit electives available towards 65 credit total

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



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 requires transfer to complete a baccalaureate degree.

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

All students who are interested in a music degree must first take a music theory pretest and meet with the head of the music department. If deficiencies in music theory and/or piano are identified, the student must first pass Basic Music Theory-MU 100 and Introduction to Piano-MU 169 prior to beginning the college-level music theory and piano curriculum.

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

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

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

Whether the student transfers at junior level is contingent upon many factors. Grades in classes are not the least of these. Although the grade of D will count at GRCC toward graduation, it 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
MU —	Band OR	(1)	3
—	Orchestra OR	(1)	2
—	Choir	(1)	3
WE —	Wellness	1	2
EN 101	English Composition	3	3
PS 110	Political Science	3	3
		15	

Second Semester

MU 102	Music Theory 2	3	3
MU 179	Aural Comp. 2	1	2
MU 152	Applied Music	2	2
MU 105	Interpretation	1	1
MU 172	Piano Technique 2	1	2
MU 235	Music History 1	3	3
MU —	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 251	Applied Music	2	2
MU 105	Interpretation	1	1
MU 236	Music History 2	3	3
MU 173	Piano Technique 3	1	2
MU —	Band OR	(1)	3
—	Orchestra OR	(1)	2
—	Choir	(1)	3
—	Group II Elective	3	3
		15	

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

Music- continued**Fourth Semester**

		Contact	
		Credits	Hours
MU 202	Music Theory 4	3	2
MU 209	Aural Comp. 4	1	2
MU 252	Applied Music	2	2
MU 105	Interpretation	1	1
MU 237	Music History 3	3	3
MU 174	Piano Technique 4	1	2
MU —	Band OR	(1)	3
—	Orchestra OR	(1)	2
—	Choir	(1)	3
—	Group III Elective	3	3
		15	
Total Credits		63	



MUSIC MERCHANDISING: (Code 211)

Ferris State University (FSU)

Grand Rapids Community College offers an associate 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 the Director FSU Music Program



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 and art required.

15 credits required/prerequisites:

- PO 101 Photography 1 (3/6)
- PO 102 Photography 2 (3/6)
- PO 106 Digital Image Processing 1 (3/6)
- AT 130 Two Dimensional Design (3/6)
- PO 126 Film Image Processing 1 (3/6)

0-9 credit choose from:

- PO 107 Digital Image Processing 2 - Color (3/6)
- PO 127 Film Image Processing 2 (3/6)
- PO 220 View Camera: Large Format Photography (3/6)
- PO 230 Digital Image Processing Applications (3/6)
- PO 240 Studio Portrait Techniques (3/6)
- PO 250 Studio Illustrative Techniques (3/6)

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 101	Photography 1	3	6
AT 130	Two Dimensional Design 1: Principles	3	6
PS 110	Survey of American Government	3	3
		16	

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

Second Semester

		Credits	Contact Hours
EN 102	English Composition 2	3	3
PC 151	The Science of Light, Optics, and Vision OR	4	6
MA 104	Elementary Algebra	(4)	4
PO 102	Photography 2	3	6
PO 105	History of Photography as Art	3	3
— —	Social Science Elective	3	
		16	

Second Year

Third Semester

PO 106	Digital Image Processing 1	3	6
PO 126	Film Image Processing 1	3	6
WE —	Wellness	1	2
— —	Humanities Elective	3	
— —	Social Science Elective	3	
— —	Electives	2	
		15	

Fourth Semester

PO —	Elective	3	6
PO —	Elective	3	6
— —	Electives	6	
— —	Humanities Elective	3	
		15	
Total Credits		62	

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

Notes:

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



PHOTOGRAPHY: (Code 250)

Associate of Fine Arts in Photography

Students should consult with the Visual Arts Department Head.

AT Studio Major: minimum of 12 credits Studio support is required

AT 130 Two Dimensional Design 1: Principles (3/6)

AT 131 Two Dimensional Design 2: Color (3/6)

AT 140 Drawing 1 (3/6) and

PO 101 Photography 1 (3/6)

Photography Emphasis: 21 credits required

12 credits required/prerequisite:

PO 102 Photography 2 (3/6)

PO 106 Digital Image Processing 1 (3/6)

PO 107 Digital Image Processing 2 - Color (3/6)

PO 230 Digital Image Processing Applications (3/6)

9 credits required, choose from:

PO 126 Film Image Processing 1 (3/6)

PO 127 Film Image Processing 2 (3/6)

PO 220 View Camera: Large Format Photography (3/6)

PO 240 Studio Portrait Techniques (3/6)

PO 250 Studio Illustrative Techniques (3/6)

Art/Design History: 9 credits required (concurrently completes 8 credits MACRAO Humanities requirement)

3 credits required:

PO 105 History of Photography as Art (3/3)

6 credits required, choose from:

AT 105 Art History Before 1400 (3/3)

AT 106 Art History Since 1400 (3/3)

AT 271 Modern Art (3/3)

General Education Studies (MACRAO) and Electives: 23

General Studies required

1 credit Wellness (WE)

6 credits at least English composition

8 credits Humanities (Group I Distribution): 9 credits from PO 105, AT 105, 106, or 271

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

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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 digital 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, and 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.

All students who are interested in pursuing the recording technology curriculum must first take a music theory pretest and meet with the head of the music department. If deficiencies in music theory and/or piano are identified, the student must first pass Basic Music Theory-MU 100 and Introduction to Piano-MU 169 prior to being placed on a waiting list for Recording Studio classes.

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)

		Credits	Contact Hours
MU 102	Introduction to Music Theory 2	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
COM 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
BA 282	Organizational Behavior	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**

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 you contact director of the FSU music program, as soon as possible.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling and Career Center 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 accounting, business management, and sales. You may be interested in this career if you're good at math, enjoy being the leader of a club or captain of a team, and have the following personal traits:

- Assertive
- Ambitious
- Efficient
- Orderly
- Practical
- Extroverted
- Persuasive
- Self-confident
- Sociable
- Dependable

Careers related to all aspects of business and marketing are:

- Human Resources Director
- Purchasing Agent
- Elected Public Official
- Insurance Agent
- Executive
- Buyer
- Marketing Executive
- Sales Professional
- Financial Services
- Industrial Marketing
- Market Research Analyst
- Realtor
- Restaurant Manager
- Chamber of Commerce
- Travel Services
- Retail/Wholesale Manager
- Investments Manager
- Airport Manager
- Institutional Marketing

BUSINESS, MANAGEMENT,
MARKETING, AND
TECHNOLOGY



ACCOUNTING: (Code 128)

Suggested GRCC Program:

Associate in Business

This program prepares students for responsible 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 Accounting Associate Business degree, 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 may be granted for BA 133 to graduates of high school programs that are members of the Kent Metropolitan Articulation Project.

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

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

SUGGESTED SEQUENCE:

First Year

First Semester

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

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

Fourth Semester

BA 201	Business Communications	3	3
BA 264	Intermediate Accounting	3	3
PS 110	Survey of American Government	3	3
— —	General 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.



BUSINESS ADMINISTRATION: (Code 102)

Suggested GRCC Program: Associate in Business

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

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

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

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

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

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

SUGGESTED SEQUENCE:

First Year

First Semester

		Credits	Contact Hours
BA 101	Business and Technical English 1 *	3	3
BA 103	Introduction to Business	4	4
BA 133	Business Word Processing 1 ** (7 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 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. BA 133 is available as a challenge exam.



FASHION MERCHANDISING: (Code 121)

Suggested GRCC Program:

Associate in Applied Arts and Sciences

The Fashion Merchandising Program prepares you for an exciting career in the ever-changing fashion world. The fashion evolution is fast-paced, reflecting personal image and interest. If you strive to set new directions, enjoy working with people, have talent, energy, and enthusiasm, you will excel in the world of fashion.

In GRCC's program you'll study both historical and futuristic perspectives of fashion. Color, fabrics, design, and garment construction are integral parts of the program. You'll evaluate merchandising as a process with the point of sale as the focus. In cooperative education courses you'll gain practical experience working for businesses. You'll research career opportunities, network, and develop personal contacts.

The following recommendations are presented as a guide. 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 156	Accounting Fundamentals OR	(3)	3
BA 256	Principles of Accounting 1 (transfer)	(4)	4
		15/16	

Second Semester

BA 102	Business and Technical English 2** OR	3	3
EN 102	English Composition 2	(3)	3
BA 170	Principles of Retailing	3	3
FM 108	Clothing Construction	3	6
IF 115	Consumer Buying and Home Management	4	4
FM 289	Fashion Seminar* OR FM 290	1	1
PS 110	Survey of American Government	3	3
		17	

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FASHION MERCHANDISING - continued

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 Education Elective	1	2
FM/IF	Elective	4	
		15	

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 290	Fashion Seminar* OR FM 289	1	1
FM/IF	Elective	1	1
		15	

Total Credits **62/63**

* Fashion Seminars are field experiences in Chicago (FM 290) and New York City (FM 289). A suitable elective may be substituted for one of the seminars.

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



INTERIOR DECORATING AND DESIGN: (Code 122)

Suggested GRCC Program:

Associate in Applied Arts and Sciences

The Interior Decorating and Design program is for individuals interested in professions related to the visual and functional improvement of interior living spaces.

Interior decorators plan and design room arrangements for home and office settings. They advise clients on design factors such as space planning, layout of furnishings and equipment, and color coordination of fabrics and finishes. Decorators may work from their homes, as subcontractors, or for businesses that sell materials and furnishings for the home and office.

In GRCC's Interior Decorating and Design program, you'll study coordination of color schemes, furniture styles and construction, window treatments, floor coverings, fabrics, and accessories. You'll analyze the client/professional relationship, space planning, and costs. You'll also actively participate in formulating ideas, solving problems, giving presentations, and working as a team.

The following recommendations are presented as a guide. 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 156	Accounting Fundamentals (degree seeking) OR		3	3
BA 256	Principles of Accounting 1 (transfer)		(4)	4
WE —	Wellness Education Elective		1	2
IF/FM	Electives		1	1
			14/15	

Second Semester

BA 102	Business and Technical English 2**	OR	3	3
EN 102	English Composition 2		(3)	3
BA 170	Principles of Retailing		3	3
IF 115	Consumer Buying & Home Management		4	4
IF 126	Furniture Design, Construction and Marketing		2	2
IF 127	Drawing Techniques		3	3
IF 289	Interiors Seminar* OR IF 290		1	1
			16	

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

Total Credits **62/63**

* Interior Seminars are field experiences in Chicago (IF 290) and New York City (IF 289). A suitable elective may be substituted for one of the seminars.

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

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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 24-27 credit hours of GRCC courses.

Students are encouraged to enroll at GRCC and MSU concurrently so they may finish the program in the quickest amount of time.

MSU Landscape and Nursery Certificate

Landscape and Lawn Management Program

MSU Contact:

Marcus Duck,
Program Coordinator
(517) 355-5191, ext. 1351
E-mail: duckmarc@msu.edu

GRCC Contact:

Rosario -Montes Sutton,
Counselor
(616) 234-4130
E-mail: rmsutton@grcc.edu

Grand Rapids Community College Courses

English Required – 6 credits:

BA 101 Business and Technical English I OR	3
EN 100 College Writing OR	3
EN 101 English Composition I OR	3
AND	
BA 102 Business and Technical English II or	3
EN 102 English Composition II	3

Note: EN courses are required for the Associate in Arts degree

Humanities Required – 6 credits

Note: Associate in Arts degree requires 8 credits of humanities

Social Sciences Required – 8 credits:

Social Sciences elective	5
PS 110 Survey of American Government	3

Wellness Required – 1 credit

Business Required – 14 credits:

BA 103 Introduction to Business	4
BA 256 Principles of Accounting 1	4
Two courses from the following:	
BA 172 Sales	3
BA 174 Advertising	3
BA 183 Supervision	3
BA 270 Marketing	3
BA 283 Business Management	3

Natural Science Required – 8 credits:

BA 103 Plant Biology	4
CM101 Chemistry	4

Computer Literacy Required – 2 credits:*

BA 145 Computer Applications in Business	4
CO 101 Intro to Computer Applications	2
CO 155 Word	2
CO 156 Excel	2

***Note:** CO 151 and CO 153 if previously taken

Mathematics Required – 3 credits:*

MA104 Elementary Algebra	4
MA105 Basic Geometry	4
MA107 Intermediate Algebra	4
TE 103 Mathematics	4
TE 104 Advanced Technical Mathematics	3

***Note:** MA 003 may be a prerequisite for the above courses based on student's math background

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LANDSCAPE AND LAWN MANAGEMENT-continued

Michigan State University Courses (24 credits minimum)

Required:

HRT 213	Landscape Maintenance	2
HRT 211	Landscape Plants I	3
HRT 212	Landscape Plants II	3
HRT 214	Landscape and Turfgrass Business Operations	2
CSS 210	Fundamentals of Soil and Landscape Science	3
CSS 232	Intro to Turfgrass Management	3
ENT 111	Basics of Applied Entomology	2
PLP 491	Plant Diseases	3

Required Internship:

AT 293	Placement Training	3
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Elective courses:

AT 290	Independent Study in Ornamental Horticulture	variable (1-4)
HRT 111	Landscape Design	3
HRT 218	Landscape Irrigation	3
HRT 475	Study Abroad	4

Other MSU HRT and CSS courses not listed here may also be offered and accepted as electives in the program. Course offerings are subject to change. Consult with the program coordinator.

Total credits to complete the MSU certificate: 48



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 may 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 I	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

BA209	Issues in Business Ethics	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 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.

Students who have a limited background in math or accounting and who may experience difficulties succeeding in BA 256 should first complete BA 156.

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling and Career Center 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

		Credits	Contact Hours
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 may 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
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	

Second Year

Third Semester

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 207	Business Law 1 OR	3	3
BA 208	Business Law 2	(3)	3
BA 272	Marketing Problems	3	3
		15	

Total Credits **62/63**

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

MARKETING - continued

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 286	Small Business Management	3/3

* 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 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.



OFFICE ADMINISTRATION: (Code 112)

Suggested GRCC Program: Associate in Business

This program prepares students for careers as office administrators/administrative professionals. It emphasizes business document preparation, computer applications in business, office procedures and culture, office ethics and etiquette, and communication skills. Cutting-edge 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

		Credits	Contact Hours
BA 136	Business Word Processing 2 *	4	4
BA 150	Business Math	4	4
BA 145	Computer Applications in Business 1	4	4
BA 103	Introduction to Business	4	4
		<hr/>	
		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 156	Accounting Fundamentals	4	
		<hr/>	
		15	

Second Year

Third Semester

BA 102	Business and Technical English 2	3	3
BA 236	Machine Transcription	2	2
BA 245	Records Management	3	3
BA —	Business Administration Elective	4	
PS 110	Survey of American Government	3	3
		<hr/>	
		15	

Fourth Semester

BA 201	Business Communications	3	3
BA 248	Contemporary Office Procedures	3	3
BA 282	Organizational Behavior OR	3	3
PY 201	General Psychology	(3)	3
— —	General Electives (Recommend EN 249, CO 145)	7	
		<hr/>	
		16	

Total Credits **62**

- * Students enrolling in BA 136 must meet one of three requirements:
1. Completed one year of high school keyboarding/document formatting as evidenced on high school transcript.
 2. Completed BA 130 AND BA 133.
 3. Passed the BA 133 Challenge Exam.

Students who pass the BA 150 Challenge Exam may waive Business Math. **(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.

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



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

		Contact Credits	Hours
CO 101	Introduction to Computer Applications	2	2
CO 105	Windows Operating System OR	2	2
CO 205	Advanced Windows Operating System	(2)	(2)
CO 110	Introduction to Computer Information Systems	3	3
CO 116	Introduction to Programming	3	3
CO 120	Using Graphics Software	2	2
CO 155	Word	2	2
CO 156	Excel	2	2
		16	

Second Semester

CO 140	Microsoft Power Point	2	2
CO 145	Using the Internet	3	3
CO 146	Web Design Fundamentals	3	3
CO 162	Introduction to Desktop Publishing	2	2
CO 170	Introduction to Database Software	2	2
CO 230	Introduction to Telecommunications	2	2
		14	

Total Minimum Credits **30**



COMPUTER APPLICATIONS SPECIALIST:

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:

See Job Training Web site.

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 Job Training
Information: (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 and Career Center and on-line at www.grcc.edu.



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 applications, programming logic 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 105	Windows Operating System	2	2
CO 110	Introduction to Computer Information Systems	3	3
CO 116	Introduction to Programming	3	3
PS 110	Survey of American Government	3	3
		16	

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 146	Web Design Fundamentals	3	3
CO 155	Word	2	2
CO 230	Introduction to Telecommunications	2	2
— —	Elective	2	2
		15/16	

Second Year

Third Semester

		Credits	Contact Hours
BA 103	Introduction to Business	4	4
CO 120	Using Graphic Software	2	2
CO 152	Photoshop	2	2
CO 156	Excel	2	2
WE —	Wellness	1	2
CO 162	Introduction to Desktop Publishing	2	2
CO 224	Systems Analysis	3	3
		16	

Fourth Semester

BA 201	Business Communication OR	3	3
COM135	Interpersonal Communication	(3)	3
BA 283	Business Management	3	3
CO 140	Microsoft Power Point	2	2
CO 145	Using the Internet	3	3
CO 170	Introduction to Database Software	2	2
CO 233	Local Area Networking	2	2
		15	

Total Credits

62/63



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

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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 62 academic credits are needed for graduation.

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	Java Programming 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
COM 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	

Second Year

Third Semester

		Credits	Contact Hours
CO 171	Database Design and Development	3	3
CO 127	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.

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	

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COMPUTER INFORMATION SYSTEMS - continued**Second Semester**

		Credits	Contact Hours
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	Microsoft Power Point	2	2
CO 155	Word	2	2
CO 230	Introduction to Telecommunications	2	2
COM 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 156	Excel	2	2
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	
		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.

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
COM 131	Fundamentals of Public Speaking**	3	3
		16	

Second Year**Third Semester**

CO 142	UNIX Shell Programming	2	2
CO 231	Wide Area Networking (WAN) Theory	3	3
CO 233	Local Area Networking	2	2
PL 202	Introduction to Logic**	3	3
EC 252	Principles of Economics 2	3	3
WE —	Wellness	1	2
		14	

Fourth Semester

CO 112	Principles of Information Security	2	2
CO 232	UNIX System Administration	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	
		16	
		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 and Career Center and on-line at www.grcc.edu.



COMPUTER SUPPORT TECHNICIAN:

GRCC Job Training Choices: (non-credit) 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.

Cost:

See Job Training Web site.

Course Outline:

(The course will focus on Microsoft software applications.)

- 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

Contact Job Training

Information: (616) 234-3800

www.grcc.edu

E-mail: training@grcc.edu



ELECTRONIC PUBLISHING: (Code 142)

Suggested GRCC Program:

Certificate in Computer Applications

Many businesses need to produce documents such as annual reports, estimates, bid specifications, technical drawings, proposals, employee manuals, advertisements, and newsletters. Typists have historically produced much of this material from handwritten drafts or from dictation. With electronic publishing software, it is possible to produce "finished looking" reports directly on a personal computer without needing the services of a typist, typesetter, or print shop.

A person who wants to complete the Certificate in Computer Applications in Electronic Publishing might already be employed and seeking to increase his/her ability to use new technology; or he/she might be a person who seeks entry-level employment producing output from others' drafts. The student who completes this certificate program may continue in existing employment, may seek new employment as a desktop publisher, or may wish to pursue home-based employment as a freelance worker.

Students may apply all course work from this certificate program to the Associate Degree in Applied Arts and Sciences in Computer Applications Technology (Code 109). Students should make course choices based on career goals, previous experience and personal preference in close consultation with a faculty advisor.

Strict adherence to the ethics of computer usage is expected of all Computer Applications students.

The following required courses may be taken in any order and at any time they are available as long as all prerequisites are met. Thirty credits are required, chosen as follows:

College Course		Credits	Contact Hours
Six credits in writing:			
EN 100	College Writing OR	3	4
EN 101	English Composition 1 OR	(3)	3
BA 101	Business and Technical English 1 AND	3	3
EN 102	English Composition 2 OR	3	3
BA 102	Business and Technical English 2	(3)	3

At least 3 credits in advanced writing chosen from:

EN 243	Essay as Literature 1: A Writing Course	3	3
EN 246	Writing for Publication	3	3
EN 247	Creative Writing	3	3
JR 251	Introduction to Journalism	3	3

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ELECTRONIC PUBLISHING - continued**At least 8 credits in art and design chosen from:**

		Credits	Contact Hours
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 155	Word	2	2
CO 156	Excel	2	2

Total Minimum Credits 30



IBM e-Business Application Development: (code 715)

Offered exclusively at GRCC's Patrick A. Thompson M-TEC® in Holland

The e-Business Application Developer program allows students to earn industry certifications in addition to an associate degree. This program enhances application development knowledge and skills, furthering careers and meeting the evolving e-business demands of organizations. Students will be prepared for a variety of information technology (IT) professional occupations, including system analysts, database administrators, software engineers, software specialists, JAVA programmer and developers and web developers.

IBM Corporation has created this unique e-business program that offers more than 700 hours of both theoretical and highly practical, hands-on approach to learning through a combination of classroom education, laboratory exercises and team projects to stimulate real-world business application experience. Students who successfully complete the IBM Advanced Career Education (ACE) e-business program are awarded IBM ACE Certificates. The program contains courses covering a variety of topics,

including C++, Java, VB Script/ASP, Web Programming and e-Business Security as well as Windows and Linux. Participants will learn how to create and deploy server side applications using Java 2 Enterprise Edition (J2EE) technology, will gain experience with database management and will learn about the necessary processes and best practices involved in software development.

For more information and to schedule an admissions test, contact the Patrick A. Thompson M-TEC® at 877-298-0007, ext 4206.

		Credits	Contact Hours
Module 1 IT Foundations			
CP 151	Intro PCs, Win 2000, Prog, Office and Internet Fundamentals	3	3
CP 153	Computer Architecture and Operation Systems Concepts	2	2
CP 149	Linux Basic	2	2
Total Module 1		<u>7</u>	

Module 2 Introduction to Programming

CP 163	Programming Fundamentals and Programming with C	4	4
CP 165	Data Structures and Algorithms	3	3
CP 172	RDBMS Concepts and SQL	2	2
CP 179	Networking Essentials	1	1
Total Module 2		<u>10</u>	

Students who complete modules 1 and 2 may take the IBM Associate Certification test.

Module 3 Programming Applications

CP 176	Object Oriented Programming with C++	3	3
CP 174	Core Java	5	5
CP 206	DB2 UDB Programming & Stored Procedures	3	3
CP 178	Software Engineering	2	2
CP 228	Object Oriented Analysis and Design using UML	1	1
CP 210	Web Programming 1 (HTML, JavaScript)	2	2
CP 214	Web Programming 2 (ASP, CGI, Perl, VBScript)	2	2
CP 240	e-Business Application Developer Project 1	2	2
Total Module 3		<u>20</u>	

Module 4 e-business Applications

CP 218	e-Bus Fundamentals, Security, e-Commerce	3	3
CP 258	Enterprise App. Development using XML	3	3
CP 220	Enterprise Java 1 (JSPs and Servlets)	4	4
CP 256	Enterprise Java (EJBs)	3	3
CP 275	e-Business Application Developer Project 2	2	2
Total Module 4		<u>15</u>	

Students who complete modules 3 and 4 may take the IBM Professional Certification test.

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

General Education Courses		Contact Credits	Contact Hours
MA 107	Intermediate Algebra	4	4
EN 101	English Composition 1	3	3
PS 110	Political Science	3	3
EN 102	English Composition 2	3	3
WE	Wellness	1	1
Total General Education Courses		14	
Total Credits		66	

College Course		Credits	Contact Hours
Six required credits in writing:			
BA 101	Business and Technical English 1*	3	3
EN 100	College Writing*	(3)	4
EN 101	English Composition 1*	(3)	3
AND			
BA 102	Business and Technical English 2*	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 110	Intro to Computer Information Systems	3	3
CO 120	Using Graphics Software	2	2
CO 140	Microsoft Power Point	2	2
CO 168	Introduction to Internet Animation	2	2
CO 170	Introduction to Database Software	2	2
CO 205	Advanced Windows	2	2
CO 230	Introduction to Telecommunications	2	2
EN 249	Technical Writing	3	3

At least fifteen credit hours from one of the following areas of specialization:

Commercial Writing:

BA 172	Sales	3	3
BA 174	Advertising	3	3
BA 201	Business Communications	3	3
CO 162	Introduction to Desktop Publishing	2	2
CO 262	Advanced Desktop Publishing	2	2
EN 246	Writing for Publication	3	3
JR 251	Introduction to Journalism	3	3
JR 254	Mass Media	3	3

Commercial Imaging:

AT 140	Drawing 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 152	Photoshop	2	2
CO 162	Introduction to Desktop Publishing	2	2
CO 262	Advanced Desktop Publishing	2	2



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 multi-media 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 62 academic credits are needed for graduation.

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

MULTIMEDIA COMMUNICATION TECHNOLOGIES - continued

Video and Multimedia:

		Credits	Contact Hours
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	

SPECIAL DEGREE TRACKS—

- Commercial Writing
- Commercial Imaging
- Video and Multimedia

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
COM 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	Microsoft Power Point	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	2	2
		14	

Fourth Semester

		Credits	Contact Hours
CO 152	Photoshop	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		62	

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

** Fulfills three hours of the Group 1 – Humanities requirement.

Commercial Imaging

First Year

First Semester

		Credits	Contact Hours
EN 100	College Writing * OR	3	4
EN 101	English Composition 1 * OR	(3)	3
BA 101	Business and Technical English 1*	(3)	3
CO 101	Introduction to Computer Applications	2	2
CO 105	Windows Operating System OR	2	2
CO 205	Advanced Windows	(2)	2
AT 140	Drawing 1	3	6
COM 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	Microsoft Power Point	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	2	2
PS 110	Survey of American Government	3	3
		16	

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

Fourth Semester

		Credits	Contact Hours
BA 174	Advertising OR	3	3
AT 261	Graphic Design 2	(3)	4
CO 152	Photoshop	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		66	

* 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
COM 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	Microsoft Power Point	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

		Credits	Contact Hours
CO 152	Photoshop	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	2	2
		15	
Total Credits		64	

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

** Fulfills three hours of the Group 1 – Humanities requirement.



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.

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

BUSINESS, MANAGEMENT, MARKETING, AND TECHNOLOGY

UNIX SYSTEM ADMINISTRATION - continued

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++ 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	

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

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:

Students must 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 and CO 105 Windows Operating System.



WEB DESIGN/DEVELOPMENT:

(Code 160)

Suggested GRCC Program:

Associate in Applied Arts and Sciences
Associate in Arts

First Year

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	

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

Second Semester		Credits	Contact Hours
BA 103	Introduction to Business	4	4
EN 102	English Composition 2 OR	3	3
BA 102	Business and Technical English 2	(3)	3
COM 131	Fundamentals of Public Speaking	3	3
CO 145	Using the Internet	3	3
CO 152	Photoshop	2	2
WE —	Wellness	1	2
		16	

Second Year

Third Semester

CO 112	Principles of Information Security	2	2
CO 146	Web Design Fundamentals	3	3
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

CO 148	HTML Essentials	3	3
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

Second Semester		Credits	Contact Hours
CO 112	Principles of Information Security	2	2
CO 146	Web Design Fundamentals	3	3
CO 230	Introduction to Telecommunications	2	2
EN 102	English Composition 2 OR	3	3
BA 102	Business and Technical English 2	(3)	3
COM 131	Fundamentals of Public Speaking	3	3
EC 251	Principles of Economics 1	3	3
		16	

Second Year

Third Semester

CO 117	Java Programming	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



WEB TECHNICAL SUPPORT: (Code 161)

Suggested GRCC Program:

Associate in Applied Arts and Sciences
Associate in Arts

First Year

First Semester

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	

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

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

		Credits	Contact Hours
First Semester			
CO 120	Using Graphics Software	2	2
CO 110	Introduction to Computer Information Systems	3	3
CO 140	Microsoft Power Point	2	2
CO 145	Using the Internet	3	3
CO 152	Photoshop	2	2
BA 103	Introduction to Business	4	4
		<u>16</u>	
Second Semester			
CO 112	Principles of Information Security	2	2
CO 230	Introduction to Telecommunications	2	2
CO 146	Web Design Fundamentals	3	3
CO 150	Introductory Computer Animation	2	2
CO 168	Introduction to Internet Animation	2	2
CO 148	HTML Essentials	3	3
CO 241	Web Databases	3	3
		<u>17</u>	
	Total Credits	<u>33</u>	



WEB TECHNICAL SUPPORT:

(Code 163)

Suggested GRCC Program: Certificate

		Credits	Contact Hours
First Semester			
CO 148	HTML Essentials	3	3
CO 112	Principles of Information Security	2	2
CO 145	Using the Internet	3	3
CO 146	Web Design Fundamentals	3	3
CO 230	Introduction to Telecommunications	2	2
BA 103	Introduction to Business	4	4
		<u>17</u>	
Second Semester			
CO 117	JAVA Programming	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
		<u>14</u>	
	Total Credits	<u>31</u>	

Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling and Career Center 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. Examples of such careers include mechanics, airplane pilots, and engineers. You may like to solve complex problems, and you may have the following personal traits:

- Analytical mind
- Critical thinking
- Motor coordination
- Rational/logical thinking
- Physical stamina
- Aptitude for math

Careers related to technologies needed to design, fabrication develop, install or maintain physical systems are:

- Air Conditioning Technician
- Plumber
- Machinist
- Tool and Die Maker
- Geographer
- Electronics/Electrical Technician
- Welder
- Quality Assurance
- Refrigeration Technician
- Mathematician
- Small Engine Repairer
- Auto Technician
- Surveyor
- Plastic Technician
- Machine



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 each 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. Students entering this program should have a 10th grade reading level and a 9th grade Algebra level.

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

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	



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. Students entering this program should have a 10th grade reading level and a 9th grade Algebra level.

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	

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

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/Applications	2	4
ER 174	Construction Blueprint	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 Small Computers*	2	2
EL 162	Control Systems	2	3
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
COM 135	Interpersonal Communication OR	3	3
— —	Humanities Elective	(3)	3

13**Total Credits****63**

Students intending to transfer to Ferris State University should also take PH 125 General Physics 1 and MA 110 College Algebra.

* Students intending to transfer to HVACR Engineering Technology at Ferris State University should take CO 105 in addition to CO 101. They should also take EN 101 and EN 102 rather than the comparable BA courses.



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.

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 building 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.

First Year

		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 106	Construction Materials 2	3	4
AR 120	Architectural Working Drawings 1 (using CAD)	4	6
AR 202	Architectural Graphics 2	3	4
BA 101	Business and Technical English * OR	3	3
EN 100	College Writing* OR	(3)	(4)
EN 101	English Composition*	(3)	(3)
AR 129	Architectural 3D CAD	3	4
		16	

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

ARCHITECTURAL DRAFTING TECHNOLOGY - continued

Second Year

Third Semester

		Credits	Contact Hours
AR 103	Building Codes and Standards	2	2
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)
		16	

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)
COM 131	Fundamentals of Public Speaking	3	3
PS 110	Survey of American Government	3	3
		17	

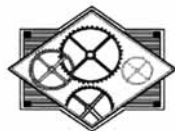
Total Credits

64

* 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
- Recommended to take PH 125 instead of PH 115
- Need 5 more credits in Social Sciences



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 are met. Students entering this program should have a 10th grade reading level and a 9th grade Algebra level.

First Semester– First 8 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 8 weeks

MN 116 Welding (<i>continued</i>)		
TR 103 Auto Engine Design and Service	4	6
TR 148 Auto Steering and Suspension	2	4
TR 210 Auto Ignition Systems	2	4
		8

Second Semester– First 8 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

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

Second Semester– Second 8 weeks

		Credits	Contact Hours
TE 103	Technical Mathematics (<i>continued</i>) *		
TR 143	Automotive Air Conditioning and Heating	2	4
TR 160	Automotive Driveability	2	4
TR 240	Automatic Transmissions	2	4
		6	
Interim Session (3 Weeks)			
TR 180	Applied Auto Servicing	4	8
	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 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:

See Job Training Web site.

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 Job Training

Information: (616) 234-3800

www.grcc.edu

E-mail: training@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."

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

AUTOMOTIVE TECHNOLOGY - continued

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.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements are met. Students entering this program should have a 10th grade reading level and a 9th grade Algebra level.

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 (<i>continued</i>)		
TR 103	Auto Engine and Design Service	4	6
TR 148	Steering, Suspension, and Alignment	2	4
TR 210	Auto Ignition Systems	2	4
		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

		Credits	Contact Hours
TE 103	Technical Mathematics (<i>continued</i>)		
TR 143	Automotive Air Conditioning and Heating	2	4
TR 160	Automotive Driveability	2	4
TR 240	Automatic Transmissions	2	4
		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 120	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 125 instead of TE 114 and MA 104 in lieu of TE 103. 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

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



COMPUTER AIDED ENGINEERING/ MECHANICAL DESIGN:

(FORMERLY: MECHANICAL
DRAFTING/CAD) (Code 928)

Suggested GRCC Program: Certificate

This program provides students with one year of training so they can assume positions as beginning detail 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.

First Semester		Credits	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		Credits	Contact Hours
DR 212	Tool Design	2	4
DR 224	Die Design	2	4
DR 258	Introduction to Pro-Engineering	4	4
EG 121	Descriptive Geometry	2	4
EG 201	Advanced Engineering Graphics	2	4
TE 104	Advanced Technical Mathematics OR	3	3
MA 108	Trigonometry	(2)	(2)
—	Drafting/CAD Specialization Electives	2(4)	3(6)
		14/19	
Total Credits		30/35	

** 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.)

		Credits
DR 225	Advanced Die Design	2
DR 241	Mold Design & Theory	3
DR 140	Introduction to Inventor	3
DR 259	Advanced Part Design and Sheet Metal Design	4
DR 260	Introduction to Catia	3
MN 220	Basic Plastic Processing	4
TE 282	Cooperative Education in Technology	3



COMPUTER AIDED ENGINEERING/ MECHANICAL DESIGN: (FORMERLY:

MECHANICAL DRAFTING/CAD
TECHNOLOGY) (Code 904)

Suggested GRCC Program:

Associate in Applied Arts and Sciences

Note: This program is articulated with the bachelor's degree program in Manufacturing Engineering Technology at Ferris State University.

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 have opportunities in such careers as mechanical drafting, CAD operation; tool, die, mold, machine and product design; and high school and college teaching.

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

**COMPUTER AIDED ENGINEERING/
MECHANICAL DESIGN - continued**

Some advanced standing credit may be granted to entering graduates of high school drafting or machine tool programs that are members of the Kent Metropolitan Articulation Project.

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

First Year**First Semester**

		Credits	Contact Hours
EG 110	Industrial Graphics with CAD	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	2	4
EG 201	Advanced Engineering Graphics	2	4
TE 104	Advanced Technical Mathematics OR	3	3
MA 108	Trigonometry	(2)	(2)
WE —	Wellness	1	2
		15/16	

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	(4)	(6)
		15/17	

Fourth Semester

BA 102	Business and Technical English* OR	3	3
EN 102	English Composition 2*	(3)	3
DR 279	Team Design Project	4	4
— —	Humanities	3	3
— —	Drafting/CAD Specialization Electives	3(4)	3(4)
PS 110	Survey of American Government	3	3
		16/17	
Total Credits		62/68	

- * 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 140	Introduction to Inventor	3
DR 259	Advanced Part Design and Sheet Metal Design	4
DR 260	Introduction to Catia	3
MN 220	Basic Plastic Processing	4
TE 282	Cooperative Education in Technology	3

**CONSTRUCTION
TECHNOLOGY:****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:

See Job Training Web site.

Course Outline:

- Basic Safety
- Construction Math
- Hand Tools
- Power Tools
- Blueprints

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

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



**ELECTRONICS
SERVICING:** (Code 926)

Suggested GRCC Program: Certificate

The Electronics Servicing Certificate program at GRCC prepares students for positions in servicing and maintaining electronic equipment. Workers install, adjust, troubleshoot, and repair a wide variety of electronic equipment. The program covers math, basic electricity and electronics, digital and analog circuits, communications and electronics servicing. All credits earned in the certificate program apply towards the Associate in Applied Arts and Sciences degree 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. Students entering this program should have a 10th grade reading level and a 9th grade Algebra level.

First Semester		Contact
	Credits	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

		Credits	Contact
			Hours
EL 108	Electronic Servicing (7 weeks)	2	4
EL 161	Introduction to Digital Logic (8 weeks)	2	4
EL 202	Communication Electronics (9 weeks)	3	6
EL 262	Basic Digital Logic Circuits (8 weeks)	2	4
EL 264	Linear Integrated Circuits	2	4
PH 115	Technical Physics	4	6
		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 at GRCC prepares students to enter this growing and complex field of electronics as service and electronic technicians. Service technicians install, adjust, troubleshoot and repair a wide variety of electronic and computer equipment. Electronics technicians work in manufacturing, industry, business, and broadcasting. They operate various types of electronic equipment, industrial control systems and computer systems. They also provide technical assistance in designing, constructing, measuring, and analyzing circuits.

Electronics Technology students at GRCC study mathematics, the theory of electricity and electronics, analog circuits, digital circuits, computer systems, equipment theory and applications, electronic servicing, and industrial controls. Course work includes extensive hands-on experiments related to the lecture topics covered.

Jobs available in this field include communications technicians, computer technicians, field engineering technicians, laboratory technicians, production tests, installers and instrument technicians.

Students who complete the first two semesters of this program with at least a 2.0 GPA 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. Students entering this program should have a 10th grade reading level and a 9th grade Algebra level.

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

ELECTRONICS TECHNOLOGY - continued

First Year

First Semester

		Credits	Contact Hours
EL 106	Technical Electricity (7 weeks)	4	8
EL 107	Technical Electronics (7 weeks)	4	8
EL 132	Electronics Mathematics * **	5	5
EL 160	Electronic Fabrication	2	3
		15	

Second Semester

EL 108	Electronic Servicing (6 weeks)	2	4
EL 161	Introduction to Digital Logic (7 weeks)	2	4
EL 202	Communication Electronics (7 weeks)	3	6
EL 262	Basic Digital Logic Circuits (7 weeks)	2	4
EL 264	Linear Integrated Circuits	2	4
WE —	Wellness	1	2
PH 115	Applied 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 (7 weeks)	3	6
EL 205	Advanced Electronics (7 weeks)	3	6
EL 261	Introduction to Microprocessor Programming (7 weeks)	2	4
EL 263	Digital Electronic Systems (7 weeks)	2	4
COM 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 Servicing I (7 weeks)	2	4
EL 266	Computer Servicing II (7 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 131. It is recommended to take PH 125 instead of PH 115 and EN 101-102 combination instead of the comparable BA courses.

** MA 110, or the combination of MA 107 and MA 108 may be substituted for EL 132.

Additional recommended courses can be chosen from:

- EL 162 Control Systems
- EL 163 Electrical Troubleshooting
- EL 164 Programmable Logic Controllers



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:

Architecture (AR)
 Drafting (DR)
 Electricity and Electronics (EL)
 Energy Management (ER)
 Engineering (EG)
 Manufacturing (MN)
 Technology (TE)
 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:

Four credits of any MA mathematics or TE mathematics course except MA 003.

Total required number of credits is 30.



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

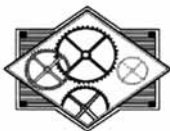
Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling and Career Center and on-line at www.grcc.edu.

Industrial Maintenance associate's degree program. Classes in this program are available in Grand Rapids and in Holland. Students entering this program should have a 10th grade reading level and a 9th grade Algebra level.

		Credits	Contact Hours
TE 103	Technical Mathematics OR	4	4
EL 132	Electronics Mathematics	(5)	(5)
MN 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	4	6
MN 218	Pneumatics	3	4
—	Electives*	6	
Total Credits		31/32	

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

		Credits	Contact Hours
Suggested Electives			
MN 113	Mechanical Power Transmissions	2	2.25
MN 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 230	Fundamentals of TIG and MIG Welding	4	8
TE 104	Advanced Technical Mathematics	3	3



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. Students entering this program should have a 10th grade reading level and a 9th grade Algebra level.

First Year

First Semester		Credits	Contact Hours
EL 132	Electronics Mathematics OR	5	
TE 103	and TE 104 Technical Mathematics	(7)	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
COM 135	Interpersonal Communication	3	3
		15	

Second Year

Third Semester

BA 101	Business and Technical English 1 OR	3	3
EN 100	College Writing OR	(3)	4
EN 101	English Composition 1	(3)	3
EL 163	Electrical Troubleshooting	2	2
EL 164	Programmable Logic Controllers	2	4
MN 217	Hydraulics	4	6
PS 110	Survey of American Government	3	3
—	Technical Elective	2	4
		16	

Fourth Semester

MN 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 AR, DR, EL, EG, ER, MN, TE, TI, or TR courses

Suggested Elective Courses

MN 246, EG 110, EL 166, ER 135, ER 136

ENGINEERING,
MANUFACTURING, AND
INDUSTRIAL TECHNOLOGY

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



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:

See Job Training Web site.

Course Outline:

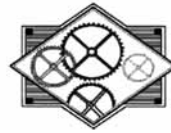
- Blueprint Reading
- Mathematics
- Using the Machinist Handbook
- Using Hand Tools
- Bench Work
- Layout
- Manual Machine Tool Operations
- Precision Measuring
- CNC and Conversational Machine Tool Operations
- Computer Operation
- Teamwork and Communication Skills

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



MANUFACTURING APPRENTICESHIP CERTIFICATE: (Code 954)

Students who have completed an approved U.S. Department of Labor Office of Apprenticeship program and have received their journey person's certificate, along with successful completion of 30 credit hours in the Technology (DR, EL, ER, MN, TE, TM, TR, TI, AR, EG) or related area, are eligible to receive an apprenticeship certificate from Grand Rapids Community College. Contact the Manufacturing Apprenticeship Office at (616) 234-3670 for more information.



MATH AND PHYSICS Engineering, Manufacturing, and Industrial Technology

www.grcc.edu/engineering

GRCC Educational Choices:

Associate in Arts and Sciences
Associate in Arts (MACRAO Agreement)

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

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

Sample Schedule for Pre-Engineering Students at GRCC:

The sample schedule is designed for students who are planning to transfer to a bachelor's degree program in engineering, including colleges such as the University of Michigan, Michigan State University, Michigan Technological University, Grand Valley State University and Western Michigan University. Various disciplines, colleges and universities may have additional requirements for application to the Engineering department of university. In some cases, it may be to the student's advantage to transfer prior to obtaining an associate's degree. **It is critical that you contact any engineering program that you wish to attend and request information about their department and general admission requirements.**

First Year

First Semester

CM 103	General Chemistry 1 (OR CM 113)	4 (4)
PS 110	Survey of American Government	3
EN 101	English Composition 1	3
MA 133	Calculus 1	5
		15

Second Semester

MA 134	Calculus 2	5
EN 102	English Composition II	3
— —	Elective Credits*	6
WE —	Physical Ed. Elective	1
		15

Second Year

Third Semester

PH 245	Calculus Physics I	5
MA 255	Calculus 3	4
EG 208	Statics†	3
— —	Elective Credits*	4
		16

Fourth Semester

PH 246	Calculus Physics II	5
MA 257	Diff. Eqns. & Lin. Algebra	4
EG 212	Dynamics†	3
— —	Elective Credits*	4
		16

Total Credit Hours: 62

*Students seeking an AA or AS degree should select Social Science and Humanities courses to meet graduation requirements. Check with transfer institutions for transferability of specific courses. Consider computer

application courses required/recommended by transfer institutions for Elective hours that are not used to meet graduation and/or the MACRAO agreement requirements.

Recommended/suggested electives:

- CO 127 (or others)
- EG 110
- EG 215
- CM 104 (CM 114)

†Check transfer institutions for requirements.



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		Contact	
		Credits	Hours
EN 101	English Composition OR	3	3
BA 101	Business and Technical English 1**	(3)	3
MN 100	Manufacturing Principles **	2	2
MN 219	Survey of Polymer Technology	3	3
MN 220	Basic Plastics Processing	4	6
TE 103	Technical Mathematics **	4	4
		16	

ENGINEERING, MANUFACTURING, AND INDUSTRIAL TECHNOLOGY

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

PLASTICS MANUFACTURING TECHNOLOGY - continued

Second Semester

		Contact	
		Credits	Hours
MN 223	Injection Molding Theory	3	3
MN 242	Applied Injection Molding	4	6
DR 241	Mold Design and Theory	3	4
— —	Elective *	6/8	
Total Credits		32/34	

* Students must take two of the following five electives:

		Contact	
		Credits	Hours
MN 165	Plastics Testing	4	4
MN 244	Advanced Plastics Processing	4	6
TE 282	Cooperative Ed in Technology	3	3
EG 110	Industrial Graphics with CAD	3	6
MN 217	Hydraulics	4	6

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



PLASTICS MANUFACTURING TECHNOLOGY: (Code 935)

Suggested GRCC Program:

Associate in Applied Arts and Sciences

Note: This program is articulated with the bachelor's degree program in Manufacturing Engineering Technology and Plastics Engineering at Ferris State University.**

The plastics forming industry continues to grow nationally and locally. An increasing variety of automotive 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	4	6
TE 103	Technical Mathematics *	4	4
EN 101	English Composition 1	3	3
		17	

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
COM 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
		15	

Fourth Semester

EN 102	English Composition 2	3	3
MN 119	Machine Ops. OR	4	8
TE 282	COOP	3	3
PS 110	Survey of American Government	3	3
MN 217	Hydraulics	4	6
		14	
Total Credits		63	

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

QUALITY SCIENCE - continued

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 OR		
MA 215	Math 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

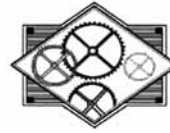
Third Semester

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
COM 131	Fundamentals of Public Speaking OR	3	3
COM 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 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
		17/18	
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; COM 131 instead of COM 135; and PH 125 instead of PE 114 or PH 115.



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, metallurgy, welding, quality assurance, machine shop, CNC programming, 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.

First Semester

		Credits	Contact Hours
MN 213	Machinery's Handbook	2	2
EG 110	Industrial Graphics with CAD	3	6
MN 100	Manufacturing Principles OR	2	2
MN 252	Geometric Tolerancing	(2)	2
MN 116	Welding	2	4
MN 234	Metallurgy	3	4
TE 103	Technical Mathematics OR	4	4
MA 107	Intermediate Algebra	(4)	4
		16	

Second Semester

MN 119	Introductory Machine Operations	4	8
MN 249	Statistical Process Control	3	3
MN 235	CNC Machine Programming	3	4
TE 104	Advanced Technical Mathematics OR	3	3
MA 108	Trigonometry	(2)	
— —	Career Track Elective	(2)	
		14/15	
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 and Career Center 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 workplace. 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
MN 119	Introductory Machine Operations	4	8
EG 110	Industrial Graphics with CAD	3	6
MN 100	Manufacturing Principles OR	2	2
MN 252	Geometric Tolerancing	(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)	
		15/16	

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
PH 115	Technical Physics OR	4	6
TE 114	Material Science	(4)	5
— —	Career Track Elective	8	+10
		15	

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 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
COM 131	Fundamentals of Public Speaking OR	3	3
COM 135	Interpersonal Communication	(3)	3
— —	Career Track Electives	6	8
MN 200	Intermediate Machine Operations	4	8
		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 COM 131 instead of COM 135; and PH 125 instead of PE 114 or PH 115 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 and Career Center and on-line at www.grcc.edu.

**TOOLING AND MANUFACTURING
TECHNOLOGY - continued**
CAREER TRACK ELECTIVES

A student must take a minimum of 14 credit hours from any of the following Tooling/Manufacturing tracks or electives.

Tool and Die		Contact	
		Credits	Hours
MN 213	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 230	Fundamentals of TIG and MIG Welding	4	8
TE 282	Cooperative Education in Technology	3	3

Mold Making

MN 213	Machinery's Handbook	2	2.5
DR 241	Mold Design and Theory	3	4
MN 230	Fundamentals of TIG and MIG Welding	4	8
MN 220	Basic Plastics Processing	4	6
MN 223	Injection Molding Theory	3	3
TE 282	Cooperative Education in Technology	3	3

CNC Machining

MN 213	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 238	Advanced CNC Programming	3	4
TE 282	Cooperative Education in Technology	3	3
MN 237	CAM Operations & Processing	3	4

CAD/CAM Programming

MN 213	Machinery's Handbook	2	2.5
DR 150	Introduction to Solidworks	3	4
DR 238	Intermediate CAD	3	4
DR 250	Introduction to Mechanical Desktop	3	4
DR 258	Introduction to PRO-Engineering	3	4
DR 260	Introduction to Catia	3	4
MN 236	CAM Machine Programming	3	4
MN 238	Advanced CNC Programming Applications	3	4
TE 282	Cooperative Education in Technology	3	3
DR 140	Introduction to Inventor	3	4

Manufacturing Production

EL 144	Basic Electricity and Electronics	3	6
EL 164	Programmable Logic Controllers	2	3
MN 230	Fundamentals of TIG and MIG Welding	4	8
MN 217	Hydraulics	4	6
MN 218	Pneumatics	3	4
MN 220	Basic Plastics Processing	4	6
MN 223	Injection Molding Theory	3	3
MN 248	Quality Assurance	3	3
TE 282	Cooperative Education in Technology	3	3

Quality Control		Contact	
		Credits	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
TE 272	Industrial Safety	2	2


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.

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

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	4	4
		14	

Second Semester

EL 164	Programmable Logic Controller	2	3
MN 230*	Fundamentals of TIG and MIG Welding	4	8
MN 231*	Welding, Fabrication, Design, and Testing	4	8
MN 234	Metallurgy	3	3
TE 104	Advanced Technical Mathematics	3	3
		16	

Total Credits **30**

* Students earning a welding certificate are required to receive a "C" grade or better in these classes.



WELDING TECHNOLOGY: (Code 932)

Suggested GRCC Program:

Associate in Applied Arts and Sciences

Note: This program is articulated with the bachelor's degree program in Manufacturing Engineering Technology at Ferris State University in Big Rapids.

Welding is the process of joining pieces of metal by fusing them together. It is the most common and efficient method of permanently connecting metal parts in the construction of automobiles, spacecraft, ships, appliances, construction equipment and thousands of other products.

Welding processes differ in the manner in which heat is applied to the parts being joined as well as in the techniques dictated by the nature of the metals involved and the configuration of the pieces. Gas welding uses a flame fueled by a mixture of oxygen and acetylene gases to supply heat, while arc welding uses the heat of a low-voltage electric arc. The nature of the metals being joined often makes it necessary to protect the heated area from the air, and different ways of providing inert gas-shielding (GTAW and GMAW welding processes) of the weld zone have been devised.

Graduates of this program have gone to work in the aerospace, boiler and piping, construction and repair welding industries. Upon completion of this program, students are eligible for testing and certification to the American Welding Society Welding Code. They are also eligible for testing as associate welding inspectors in the AWS code.

Students at GRCC learn oxy/fuel, shielded metal, gas tungsten, gas metal, and pipe welding. These skills qualify them for a wide variety of welding jobs in manufacturing, construction and maintenance industries. Job opportunities for trained welders are expected to increase in the years ahead. The U.S. Department of Labor publication Occupational Outlook Quarterly states that "... employment of skilled welders will grow, and job prospects will be good."

Some advanced standing credit may be granted to entering graduates of high school vocational programs that are members of the Kent Metropolitan Articulation Project.

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

First Year**First Semester**

		Credits	Contact Hours
EG 110	Industrial Graphics with CAD	3	6
MN 134	Oxyacetylene Welding**	3	4
MN 136	Basic Arc Welding**	4	8
TE 103	Technical Mathematics	4	4
MN 100	Manufacturing Principles	2	2
		16	

Second Semester

EL 164	Programmable Logic Controller	2	3
MN 230	Fundamentals of TIG and MIG Welding**	4	8
MN 231	Welding, Fabrication, Design, and Testing**	4	8
TE 104	Advanced Technical Mathematics	3	3
TE 114	Material Science or	4	5
PH 115	Technical Physics	(4)	(6)
		17	

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 119	Introductory Machine Operations	4	8
MN 234	Metallurgy	3	3
WE —	Wellness	1	2
		14	

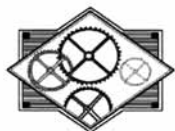
Transfer Opportunities: Bachelor Degree Transfer Guide Supplement for many majors offered at Michigan Colleges and Universities is available at the Counseling and Career Center and on-line at www.grcc.edu.

WELDING TECHNOLOGY - continued**Fourth Semester**

			Credits	Contact Hours
BA 102	Business and Technical English 2*	OR	3	3
EN 102	English Composition 2*			
MN 232	Pipe Welding**		5	8
MN 217	Hydraulics OR		4	6
MN 218	Pneumatics		(3)	4
PS 110	Survey of American Government		3	3
— —	Humanities Elective*		3	
			17/18	
Total Credits			64/65	

* Students intending to transfer to a four-year institution should take DR 258 instead of MN 100 and should take COM 131 as their Humanities Elective. They should also take EN 101 and EN 102 instead of BA 101 and BA 102; MA 107 and MA 108 instead of TE 103 and 104; and PH 125 instead of TE 114 or PH 115.

** Students earning an Associates degree in welding technology are required to receive a "C" grade or better in these classes.



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:

See Job Training Web site.

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: Job Training
Information: (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 and Career Center 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 to the treatment of injuries and disease. Examples of careers in this pathway include physicians, nurses, and veterinarians. You may be sensitive to the needs or pains of people and/or animals, and you may have the following personal traits:

- Friendly
- Patience
- Dependable
- Responsible
- Empathetic
- Tactful
- Humanistic

Careers related to the promotion of health as to well as the treatment of injuries and diseases are:

- Physician
- Dentist
- Chiropractor
- Rehabilitation Therapist
- Recreational-l Therapist
- Registered Dental Hygienist*
- Physical Therapy Assistant
- X-ray Technician
- Emergency Medical Technician
- Licensed Practical Nurse*
- Respiratory Therapist
- Registered Dental Assistant*
- Optometrist
- Medical Office Assistant
- Pharmacist
- Registered Nurse*
- Occupational Therapy Assistant*
- Radiologic Technician*
- Surgical Technician**

* Can be completed at GRCC

** Can be completed at LCC and GRCC

HEALTH



Health Sciences

GRCC Educational Choices:

Associate in Arts (MACRAO Agreement)

**Contact: Health Admissions
(616) 234-4348**

Health Admission Requirements and 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 Enrollment Center at (616) 234-4000 to request application information or visit our website. Following acceptance to the College, formal application and acceptance from the Health Admissions Office is required. The health programs offered at GRCC are:

- Dental Assisting
- Dental Hygiene
- Nursing: Associate Degree Nursing
- Nursing: Practical Nursing Certificate
- Occupational Therapy Assistant
- Radiologic Technology
- Surgical Technology (with LCC)

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 Enrollment Center, 105 Main Building or in the Health Admission Coordinator's Office, 502 College Park Plaza Building.

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 assigns a ready date for the respective program. A letter announcing acceptance to the chosen health program is sent and students are invited to meet with program staff to develop an Educational Development Plan (EDP). In programs with waiting lists, there may be some time (a year or more) between the original acceptance letter and the EDP meeting. Failure to meet program entrance requirements within two years will result in the removal of the student from the health plan code and the student file will be inactivated.

To ensure successful progress and completion of entrance requirements for a health program, students must confirm that all records, transcripts, and any other documents are received by the Health Admissions office by calling (616) 234-4348 or by e-mailing pnaujal@grcc.edu. Students are responsible for maintaining and updating current phone number and address changes online.

If you are interested in enrolling in a health program, you should be aware of special considerations and clinical requirements that affect health students that must be met for graduation including a grade point average (GPA) of at least a 2.0 in both GRCC courses and Health Program courses. Please check for individual Health Programs requirements. Prospective students may apply for entry into Health Programs at the completion of their junior year in high school.

All GRCC Health Programs have specific clinical requirements that must be met as well for graduation. The following will prevent your ability to complete the clinical requirements and also to complete a health program:

- If you elect to not have the hepatitis B vaccination series or do not provide proof of current immunizations.
- If you have a history of chemical, latex, or other sensitivities and/or allergies which occur in the work or clinical environment.
- Effective 2002, felony convictions and some misdemeanors will prevent you from participating in clinical experiences and thus completing program requirements and taking licensure, certification, and registry examinations. This will limit/exclude employment options.

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

- Federal and state laws and outside regulations require a criminal background check and fingerprinting of those assigned to hospitals, long term care, nursing homes, home for the aged, and schools. You must submit a criminal background and FBI fingerprint check and permit the release of the findings to GRCC and the health care facility. Prior to application, please check the GRCC web site for additional instructions. Students will be responsible for any related fees.
- If you test positive on a drug screening test as required by a clinical facility students must release findings to GRCC and the healthcare facility, as required.

Costs: In addition to tuition, fees, books, you should expect to pay for various other program related expenses, for example, uniforms, testing, transportation, and supplies. Details and estimates of these expenses are available at each Health Program office.

Personal Health Care costs: All health program students are encouraged to maintain personal health insurance and must be aware that should an incident occur within a respective course all related healthcare costs incurred are the responsibility of the student

Time limit: To be eligible for graduation, after taking the first course in a designated Health Program, the student must complete a two year program within five years and a one year program in three years.

Sciences: In order to be acceptable as transfer courses into health programs, science courses, must have been completed within eight years of graduation/completion of the specific GRCC health programs.



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ASSOCIATE DEGREE NURSING:

(Students should initially enroll in Code 321)

Suggested GRCC Program: Associate in Nursing

The Associate Degree program is four and a half semesters after the pre-nursing semester. It is 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. Have a negative criminal background check and urine drug screen.
5. Score at least 75% on the HESI test (fee). This test assesses knowledge in reading, vocabulary and math.

Candidates may apply for entry into the program at the end of their junior year in high school. To be eligible for the ADN, students must earn a minimum cumulative grade point average of 2.0 (80%) in the prescribed ADN curriculum. In addition, to be eligible for graduation, a minimum grade of "C" (2.0) is required in each of the required nursing courses.

Opportunities exist for Licensed Practical Nurses (LPNs) with current unencumbered licenses to enter the ADN program with advanced standing. Contact the Director of Nursing Programs or view the Nursing program website for additional information.

Life science courses, must have been completed within eight years of graduation/completion of the specific health programs at GRCC.

Transfer credit from college-credit-granting institutions for **nursing courses** may be granted if completed within three (3) years of application and a grade of "C" (2.0) or higher was earned. The determination of the transferability of course credit rests with the Program Director and Assistant Dean of the School of Workforce Development. In case of conflict, the Dean of the School of Workforce Development shall render a judgement.

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.

		Credits	Contact Hours	MT*
Pre Nursing Semester				
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***	3	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		
2nd Semester				
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		

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

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 126 or BI 127 will be a C-.



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 with one pre-semester 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.

Full-time students are admitted to the program once a year for the Winter semester. Full-time students attend classes five days/week for two semesters and a summer session. Students with jobs and/or other pressing responsibilities are encouraged to take this program on a part-time basis. Part-time students are admitted annually in September. Part time students attend classes two days/week for seven semesters and summer sessions. 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. Have a negative criminal background and finger printing check and urine drug screen.
4. Score at least 70% on the HESI test. (fee) This test assesses knowledge in reading, vocabulary & math.

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.

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 contact the Director of Nursing Programs or the Nursing Program website for additional information.

		Credits	Contact Hours	MT*
Pre-Practical Nursing 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
		5		
Winter Semester				
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
		15		
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	7.5/13.5
PN 143	Role Adjustment (3.5 weeks)	5	7.5	10/20
		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.

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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 as chairside, office and laboratory work assistants. 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. Registered dental assistants are often in short supply, making GRCC 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.

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.

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.

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 40 on the algebra or 76 on the Health arithmetic test.*
4. Score at least 64 on the Health reading 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 Auxiliary 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				

** A different Wellness class may be substituted for WE 156 if the student can document current CPR/BLS for the Professional Rescuer certification prior to the end of the first semester.

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<u>Winter Semester</u>	<u>Credits</u>	<u>Meeting Time</u>			
		<u>CH*</u>	<u>Lec</u>	<u>Lab</u>	<u>Clinic</u>
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:

<u>College Course</u>	<u>Contact Credits</u>	<u>Hours</u>
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
COM 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 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.

Pre-Dental Hygiene Program Requirements

In order to be eligible for admission into the Pre-Dental Hygiene portion of the 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.)

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.

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- The GRCC Dental Hygiene program takes a minimum of 3 years to complete. The first year is “pre-dental hygiene.” Students may enroll in these courses and can proceed at their own pace. Once the 4 pre-dental hygiene science courses (BI 121, BI 122, BI 127 and CM 210) are completed with a “C-” or better, the student’s name will be added to the “program entry ready/waiting “ list and the student will be contacted to meet with the program director about beginning the dental hygiene courses.
- 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
EN100 College Writing** OR	3	3	3		
EN101 English Composition 1 ** (3)	3	3	0	0	0
SO 251, or SO 254, or SO 260 **	3	3	3	0	0
PY 201 General Psychology**	3	3	3	0	0
	17				

Second Semester

BI 122† Human Anatomy and Physiology 2	4	5	3	2	0
CM210† Inorganic, Organic, and Biochemistry	4	6	4	2	0
EN 102 English Composition 2**	3	3	0	0	0
WE 156‡ First Aid **	1	2	2	0	0
COM 131, or COM 135, or GH 120**	3	3	3	0	0
PS 110 Survey of American Government**	3	3	3		
	18				

First Year (Program Entry)

Third Semester (Fall)

DH 113 Dental Head and Neck Anatomy, Embryology and Histology	5	6	4	2	0
DH 119 Pre-Clinical 1	6	10	2	8	0
DH 120 Nutrition for the Dental Hygienist (last 10.5 weeks)	3	3	4	0	0
DX 104 Infection Control in Dentistry (1st 3.5 weeks)	2	2	4	4	0
DX 115 Introduction to Dentistry (1st 7 weeks)	2	2	4	0	0
	18				

Fourth Semester (Winter)

	Credits		Meeting Time		
	CH*	Lec	Lab	Clinic	
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				

Sixth Semester (Winter)

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
	12				

Total Dental Credits 72
Total Non-Dental Credits 35

† 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.

‡ A different Wellness course may be substituted for WE 156 if the student can document current CPR/BLS for the Professional Rescuer certification prior to beginning DH 129.

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

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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.

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 English and Math placement tests, since good reading, writing, and math 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.

The occupational therapy assistant student will need to develop the skills necessary to relate to others verbally and in a written manner. The student will be required to perform written documentation skills to communicate with other professionals.

In the field of Occupational Therapy, therapists need to demonstrate the characteristics of self-awareness, self-acceptance, awareness of others and the ability to communicate that awareness. Therapists need to cope effectively with the emotional demands of the environment and to interact effectively with a variety of people. A therapist must be capable of subordinating personal feelings and must possess sufficient emotional stamina to deal with patients who will depend on him/her for emotional and psychological support during therapy.

Students will be required to perform certain physical functions in order to successfully complete the Occupational Therapy Assistant program. These functions will be performed throughout the course work and/or clinical experience. These functions are not conditions for admission to the program; they are listed to alert the prospective student to the physical and emotional functions required as an occupational therapy assistant. If a student requires accommodations, it is his/her responsibility to contact Disability Support Services at (616) 234-4140.

The physical functions include:

1. **Physical Strength** - A therapist will assist in transferring patients to or from wheelchairs, floors, mats, toilets, cars, beds, bathtubs, and showers. Other transfers may be required. These patients may be paralyzed or have some degree of incapacity such as poor balance, strength, coordination and endurance. The therapist may also have to move equipment, patients in wheelchairs, woodworking tools and craft equipment.
2. **Mobility** - In the course of performing duties in occupational therapy, a therapist will be expected to stand, lift, reach, bend, stretch, provide support and stability, and perform activities on a floor mat. Sufficient independent mobility within the architectural environment is necessary. A therapist must move quickly in an emergency, may have to quickly move patients, and may also perform treatment in a standing position over a long period of time.
3. **Hearing** - A therapist should have the ability to hear faint sounds from a distance of 4 feet—approximately the distance between a patient seated in a wheelchair and a person in a standing position next to the wheelchair. A therapist may be required to hear sounds such as those emitted by an electric hand saw, electric drill, motorized wheelchair, and blood pressure (using a stethoscope).
4. **Visual Discrimination** - A therapist should have sufficient vision to be able to differentiate movements, to read markings on instruments and measuring devices, and to read newspaper small print.
5. **Coordination** - Sufficient motor skills, eye-hand coordination skills, manipulative skills and sensory function in at least one upper extremity may be needed by a therapist to assist with therapeutic activities. Many other therapeutic activities require dexterity, manipulation, strength, and body flexibility.
6. **Manual Dexterity** - A therapist should have sufficient fine motor skills to manipulate objects and people safely. Manual dexterity to fabricate splints, to assist a patient with completion of therapeutic projects/activities, and to demonstrate fine motor movements is also required.
7. **Communication Skills** - A therapist should be able to communicate orally and in writing. For example, a therapist should be able to read and give directions and instructions and to record health data regarding patients/clients.

Students are admitted to the program once a year, in the Fall semester.

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

OCCUPATIONAL THERAPY ASSISTANT - continued**Program Requirements:**

In order to be eligible for admission into the Occupational Therapy Assistant program, a student must:

1. Be a high school graduate or have passed the high school equivalency GED (General Educational Development) Test.
2. Have a high school GPA of at least 2.5.
3. Have completed BI 121 with a C- or higher, effective April 1, 2007.
4. Score at least 40 on the algebra or 76 on the arithmetic portion of the health math test.
5. Score at least 74 on the health reading test.
6. Have completed one semester course of high school computers focusing on computer literacy, Internet skills, retrieval and management of information with a grade of at least a "C".
7. Complete and pass fingerprinting for criminal background check and release findings to GRCC OTA department.

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.

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). A felony conviction may affect a graduate's ability to sit for the NBCOT certification examination or state registration. For further information on limitations, you can contact NBCOT at 800 S. Frederick Ave., Suite 200, Gaithersburg, MD 20877-4150; (301) 990-7979. After successful completion of this exam, the individual will be a Certified Occupational Therapy Assistant (COTA).

Most states require licensure in order to practice; however, state licenses are usually based on the results of the NBCOT Certification Examination. The State of Michigan requires registration for therapists to practice.

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, name tags, OTA examination fee, supplies, transportation and parking. These costs can add about \$1,000 a year to the usual tuition and fees.

OTA courses must be taken in the sequence identified below:

Pre Program Requirements	Credits	Meeting Time			
		CH*	Lec	Lab	Clinic
BI 121 Human Anatomy and Physiology 1**	4	5	3	2	0
First Year					
First Semester					
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 Intervention 1	3	5	2	3	0
PY 201 General Psychology **	3	3	3	0	0
BI 122 Human Anatomy and Physiology 2 **	4	5	3	2	0
CD 118 Human Growth and Development 1**	4	5	3	2	0
	21				
Second Semester					
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
	16				
Summer Session (Required)					
PS 110 Survey of American Government **	3	3	3	0	0
WE156 First Aid ****	1	2	2	0	0
	4				

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

Second Year

	Credits	CH*	Meeting Time		
			Lec	Lab	Clinic
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
GH 141 Spanish for Healthcare	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. B1 121 and B1 122 must be completed within eight years prior to OT 214.

*** 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.

Note: Students must register by August 1st for OT 220 and by December 1st for OT 230 to be placed in fieldwork assignments. If not registered by these dates, students will not be assigned the fieldwork placements necessary to complete their program. They will have to wait until the next course availability.



RADIOLOGIC TECHNOLOGY:

(Students should initially enroll in Code 325)

Suggested GRCC Program:

Associate in Applied Arts and Sciences

The mission of the Grand Rapids Community College Radiologic Technology Program is to demonstrate radiographic skills, critical thinking skills, communication skills, apply radiation safety, patient care, professional attitudes, and lifelong learning characteristics that will prepare students for entry into the workforce of diagnostic medical Imaging as a registry eligible radiographer.

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 50-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.

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

RADIOLOGIC TECHNOLOGY - continued

- Manual Dexterity—Gross motor skills such as standing, walking, and writing are all required to perform the duties of a radiologic technologist. In addition, fine motor skills are needed (such as the ability to make insertion of IV lines, calibrate equipment, draw blood, and so on).
- Communication Skills—The student must be able to communicate orally and in writing. For example, he/she must be able to read and give directions clearly 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.

Pre-Program Requirements

In order to be eligible for admission into the Radiologic Technology program, students must:

- Be a high school graduate or have passed the high school equivalency GED (General Educational Development) Test.
- Have a high school GPA of at least 2.0.
- Have completed at high school a one-year course in algebra with at least a grade of "C" or better. (Suitable equivalent courses are available at GRCC for college credit.)
- Score at least 40 on the algebra and 76 on the health algebra test.
- Score at least 74 on the health reading test.
- Complete and earn a grade of C- or higher in BI 121 and BI 122.
- Submit and release findings of criminal background and fingerprinting check and drug screen to GRCC clinical facilities. A student with a felony conviction may be prevented from taking the Registry examination and thus completing the Radiologic Technology program

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

Pre Program Requirements	Credits	CH*	Meeting Times*		
			Lec	Lab	Clinic
BI 121 Human Anatomy and Physiology ***	4	5	3	2	0
BI 122 Human Anatomy and Physiology ***	4	5	3	2	0
Total Pre Program Credits	8				

First Year**First Semester**

	Credits	CH*	Meeting Times*		
			Lec	Lab	Clinic
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
	12				

Second Semester

	Credits	CH*	Meeting Times*		
			Lec	Lab	Clinic
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
	13				

Summer Session I (Required)

RT 131 Clinical Practicum in Radiologic Technology 2	4	4	0	0	40
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Second Year**Third Semester**

BA 102 Business and Technical English 2** OR	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
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Total Credits 74

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

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.

* 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.

*** BI 121 and BI 122 must be completed with a C- or higher.



SURGICAL TECHNOLOGY PARTNERSHIP

(Students should initially enroll in Code 380)

Grand Rapids Community College (GRCC) and Lansing Community College (LCC) offer a partnership for students interested in the field of Surgical Technology. Students may take general education requirements at GRCC before transferring to LCC to complete the Surgical Technology program requirements (upon completion of all course requirements including course GPA of 2.5 and acceptance into the Surgical Technology program). Clinical course work may be completed in Grand Rapids. For more information, contact either Joseph Long at LCC at (517) 483-1432 e-mail: longj9@lcc.edu or Paula Naujalis at GRCC at (616) 234-4348 e-mail: pnaujali@grcc.edu.

How to Enroll

First apply through the Enrollment Center at GRCC and be admitted to the College. The Enrollment center may be reached at (616) 234-4000 or visit our website at www.grcc.edu. Admissions procedures are outlined in the GRCC College Catalog and on the web. Students will be able to take their first year course work at GRCC combined with online LCC courses. SURG 103* must be taken during Second Semester. Specific questions about the Surgical Technology Program may be answered by calling or e-mailing Joseph Long at LCC: (517) 483-1432/longj9@lcc.edu. GRCC students may contact Paula Naujalis at (616) 234-4348 or e-mail at pnaujali@grcc.edu. Enrollment is limited. Students are advised to contact the Financial Aid office at both GRCC and at LCC to determine which school will be recognized as their "home" institution for financial aid purposes and reporting.

Upon satisfactory completion of all prerequisites, students will apply to LCC's Surgical Technology Program. Admission procedures are coordinated through LCC Enrollment Services Office. They are responsible for distributing, receiving and dating application forms. Therefore, any student desiring admission into this program should contact Enrollment Services, GVT Building-Suite 2200 (517) 483-1200, e-mail selectiveadmission@lcc.edu to receive an application. The student may then contact the program advisor, Joseph Long, for further information by calling (517) 483-1432 or e-mailing longj9@lcc.edu.

First Year

Courses to be taken at GRCC, and through LCC

GRCC	LCC	Credits	Credits
BI 121	BIOL 201	Human Anatomy	4
BI 122	BIOL 202	Human Physiology	4
—	CHSE 117*	Health Law and Ethics	2
GH 110 &			
GH 111	CHSE 120	Medical Terminology	4
MA 107	MATH 112	Intermediate Algebra	4
	MGMT 234*	Diversity in the Workplace	3
EN 101	WRIT 121	Composition I	4
	SURG 103*	Surgical Asepsis	2
COM 131	SPCH 110	Oral Communication in the Workplace (LCC)	
		Public Speaking (GRCC)	3
			30

Second Year

Courses to be taken at LCC

—	—	SURG 100	Fundamentals of Surgical Technology	3
—	—	SURG 101	Surgical Patient	2
—	—	SURG 108	Surgical Pharmacology	2
—	—	SURG 109	Basic Operative Procedures	2
—	—	SURG 121	Applied OR Techniques I	2
—	—	SURG 122	Applied OR Techniques II	3
—	—	SURG 110	Advanced Operative Procedures	6
—	—	SURG 111	Surgical Specialty Components & Professional Prep	2
—	—	SURG 123	Applied OR Techniques III	8
—	—	SURG 124	Applied OR Techniques IV	3
				32
		Total Credits		63

* Online through LCC

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



HEALTH SCIENCES



Human Services

HUMAN SERVICES

Are you friendly, open, understanding, and cooperative? Do you like working with people to solve problems? Do you like reading, storytelling, traveling, or tutoring young children?

This program of study relates to childcare, civil service, education, hospitality, and the social services. Careers in the pathway include counselors, teachers, and religious ministry. You may be sensitive to the needs of others, and you may have the following personal traits:

- Friendly
- Persuasive
- Religious Faith
- Outgoing
- Tactful
- Humanistic

Careers related to helping people improve their life physically, socially or emotionally are:

- Child Care Provider
- Security Guard
- Special Ed Teacher
- Minister
- Missionary
- Funeral Director
- Guidance Counselor
- YWCA/YMCA Director
- College Instructor
- Elementary Teacher
- Police Officer
- Economist
- Women's Studies
- 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



ANTHROPOLOGY:

Anthropology is the study of all aspects of the lives of human beings. The emphasis on non-Western cultures, but includes some cross-cultural comparisons of Western and non-Western social patterns. Anthropologists focus primarily on four areas: culture, linguistics, archaeology, and the biological components of human life.



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.

The curriculum is designed to meet the accreditation requirements of both the Retail Bakers Association and that of the American Culinary Federation Accreditation Commission.

First Semester		Credits	Contact Hours
CA 124	Retail Baking	5	12.5
CA 104	Bakery	5	12.5
CA 111	Restaurant Sanitation and Safety	2	2
CA 140	Hospitality Forms and Formulas	4	4
CA 200	Hospitality Management	3	3
		19	

Second Semester

		Credits	Contact Hours
CA 204	Pastry	5	12.5
CA 224	Bakery/Deli Operations	5	12.5
CA 135	Cake Decorating Basics	2	2
CA 201	Food Service Cost Controls and Financial Analysis	3	3
CA 234	Marketing	3	3
		18	

Summer Session (Required)

CA 180	Cooperative Education in Culinary Arts (student must satisfy a minimum 240-hour work requirement)	3	
		3	
Total Credits		40	



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.

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

First Year

		Contact*	
First Semester		Credits	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. OR	3	3
ED 200	Introduction to Teaching	(3)	3
— —	Natural Science Elective	4	4
		<u>17</u>	

Second Semester

EN 102	English Composition 2	3	3
CD 119	Methods in Pre-school Education	4	6
EN 250	Children's Literature	4	4
CD 215	Adult-Child Interaction	3	3
CD 116	Families, Intimate Relationships and Human Sexuality	3	3
		<u>17</u>	

Second Year

Third Semester

CD 210	Infant and Toddler Development	4	5
CD 230	Young Children with Special Needs	4	5
CD 218	Preschool Management	3	3
— —	Humanities Elective	4	4
		<u>15</u>	

Fourth Semester

CD 260	Emergent Literacy OR	3	3
CD 270	Leadership in Early Childhood Education	(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	
		<u>13/14</u>	

Total Credits 62/63

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

** The AA Degree requires one natural science course to include a laboratory.

+ 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.

++ 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.



**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	<u>3</u>	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 and Career Center and on-line at www.grcc.edu.



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 currently 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 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 to monitor 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.

Students in Corrections may qualify for either the Associate in Applied Arts and Sciences (AAAS) degree or the Associate in Arts (AA) degree. Those who wish to earn the AA should take care that they meet the communication, humanities, and natural science requirements for that degree.

Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

			Contact Credits	Hours
EN 100	College Writing ** OR	(3)	4	
EN 101	English Composition 1 **	3	3	
EN 102	English Composition 2 **	3	3	
CJ 105	Introduction to Corrections #	3	3	
CJ 110	Introduction to Criminal Justice	3	3	
PS 110	Survey of American Government	3	3	
CJ 115	Client Growth and Development #	3	3	
SP/CJ 122	Spanish for Criminal Justice	3	3	
CJ 140	Juvenile Delinquency	3	3	
WE 140	Personal Defense	1	2	
CJ 145	Juvenile Corrections	3	3	
WE 156	First Aid	1	2	
CJ 216	Client Relations in Corrections #	3	3	
CJ 221	Correctional Institutions #	3	3	
CJ 237	Legal Issues in Corrections #	3	3	

Contact Credits Hours

CJ 243	Methods of Interviewing	3	3
CJ 245	Substance Abuse	3	3
CJ 246	Alcohol Use and Abuse	3	3
— —	Natural Science Elective **	4	5
— —	Natural Science Elective **	4	5
— —	Humanities Elective **	3	3
	(Recommend COM 131 or COM 135)		
CJ 285	Corrections Internship 1	3	3
CJ 286	Corrections Internship 2	3	3
Total Credits/Contact Hours (for AAAS)		64	68
Total Credits/Contact Hours (for AA)		69	73

** The AA degree also requires 8 credits of natural science (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.



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.

New students may enter the Culinary Arts program in either September 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.

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

This program is articulated with baccalaureate programs at Ferris State University and Grand Valley State University. Students interested in transferring to either of these colleges following completion of their work at GRCC should consult the transfer institution 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
		<u>17</u>	

Second Semester

CA 114	Food Production	5	12.5
CA 115	Table Service	5	12.5
CA 102	Introduction to the Hospitality Industry	2	2
CA 112	Menu Planning and Nutrition	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
		<u>18</u>	

Summer Session (Required)

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

Second Year

First Semester

CA 204	Pastry	5	12.5
CA 205	Banquets and Catering	5	12.5
EN 102	English Composition 2 OR	3	3
BA 102	Business and Technical English 2	(3)	3
PS 110	Survey of American Government	3	3
WE 156	First Aid	1	2
		<u>17</u>	

Fourth Semester

CA 244	Advanced Food Production	5	12.5
CA 245	Advanced Table Service	5	12.5
CA 140	Hospitality Forms and Formulas	4	4
CA 200	Hospitality Management	3	3
		<u>17</u>	

Total Credits 72



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.

Students interested in transferring to either of these colleges following completion of their work at GRCC should consult the transfer institution 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

		Credits	Contact Hours
First Semester			
CA 105	Skill Development	5	12.5
CA 124	Retail Baking	5	12.5
CA 102	Introduction to the Hospitality Industry	2	2
CA 111	Restaurant Sanitation and Safety	2	2
CA 140	Hospitality Forms and Formulas	4	4
		<u>18</u>	

Second Semester

CA 224	Bakery/Deli Operations	5	12.5
CA 112	Menu Planning and Nutrition	3	3
CA 209	Principles of Food Preparation	3	3
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
		<u>17</u>	

Summer Session (Required)

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

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

CULINARY MANAGEMENT - continued

Second Year

Third Semester

		Credits	Contact Hours
CA 114	Food Production OR	5	12.5
CA 115	Table Service	(5)	12.5
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	

Fourth Semester

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 201	Food Service Cost Controls and Financial Analysis	3	3
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	

Total Credits 72



ECONOMICS:

Economics is the study of scarcity in which students examine the relationships people have with each other in regard to the allocation of resources. The study of economics at GRCC is broken down into two classes for the beginner. Macroeconomics is the study of the economy as a whole and Microeconomics is the study of individual behavior in the economy (in other words the study of the components of the larger economy).



EDUCATION:

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 first semester of their sophomore 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 59 on the G2 level 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 and Career Center 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**

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



PARAPROFSSIONAL EDUCATION: (Code 420)

Contact: *Child Development*
(616) 234-3380

This program is designed to prepare students to work as paraprofessionals in K-8 classrooms and K-12 Special Needs classrooms. It is an Associate in Arts degree aimed at satisfying federal requirements for Title I programs. Courses are designed to build knowledge and skills related to human growth and development, the field of teaching, characteristics of learners, special education, instructional content and practice, the teaching and learning environment, behavior management, communication, diversity of families, health, safety and emergency procedures and professionalism and ethical standards. The majority of courses will also transfer into elementary teacher certification programs at four-year universities. Students should work closely with their advisor throughout the program to ensure transferability. Students working in Pre-K programs can either complete the Child Development program (Code 120) or follow this program and take two additional courses (CD 119 and CD 218) to complete the formal training hours required to obtain a CDA credential.

Students in Paraprofessional Education may qualify for either the Associate in Arts degree or the Associate in Applied Arts and Sciences degree. Those wishing to earn the AA degree should be sure to meet the communications, humanities, social science and natural science requirements for that degree.

The following scheme is presented as a guide only. Courses may be taken in any order, as long as all requirements (including prerequisites) are met:

First Year

First Semester

		Credits	Contact Hours
EN 101	English Composition	3	3
CD 215	Adult-Child Interaction	3	3
CD 118	Human Growth and Development	4	5
PS 110	Survey of American Government	3	3
CO 101	Introduction to Computer Applications	2	2
		<u>15</u>	

Second Semester

EN102	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 <i>SP 101</i> <i>Introductory Spanish</i>)	4	4
WE 157	Elementary Games and Rhythms	1	2
		<u>15</u>	

Second Year

Third Semester

		Credits	Contact Hours
EN 250	Children's Literature	4	4
CD 230	Young Children with Special Needs	4	5
— —	Social Science Elective (Recommended <i>HS 249 History of United States from Exploration through Reconstruction</i> OR <i>HS 250 U.S. History from End of Reconstruction to the Present</i>)	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
		<u>16</u>	

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	
		<u>16</u>	
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.

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



PRE-ELEMENTARY EDUCATION: (Code 804)

Suggested GRCC Program: Associate in Arts

The curriculum for students planning to become elementary teachers varies considerably among transfer institutions. Please see an advisor for specific information pertaining to the courses to take while at GRCC. A sample program is suggested below.

A Sample Program for Pre-Professional Elementary Education Leading to an Associates Degree

Course

ENGLISH

EN 101 English Composition 1	3 cr.
EN 102 English Composition 2	3 cr.

HUMANITIES

COM 131 Introduction to Public Speaking OR	
COM 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.
GL 111 Geology for Educators	4 cr.
PC 101 General Physical Science	4 cr.

MATHEMATICS

MA 107 Intermediate Algebra (or equivalent)	4 cr.
MA 210 Math for Elementary Teachers 1 *	4 cr.
MA 211 Math for Elementary Teachers 2 *	4 cr.
*Must have a C in Math 107 or High School Equivalent	

FITNESS/WELLNESS ACTIVITIES

WE 157 Elementary Games and Rhythms	1 cr.
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PROFESSIONAL CORE

CD 118 Human Growth and Development *	4 cr.
ED 200 Introduction to Education*	3 cr.

Additional Elective(s): 9 cr.

Possible considerations: SP101, MU200, AT 255

Consult transfer institution to identify additional required courses.

Total for Associates in Arts: 62 Credits
(MACRAO agreement is met)

*Be sure to check with specific transfer institution to see if this course is accepted.

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 Education Program office at Room 308, Main or call (616) 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

COM 131 Introduction to Public Speaking OR	
COM 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.

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

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.
- ED 200 Introduction to Education * 3 cr.
- Additional Elective(s): 22/23

* Be sure to check with specific transfer institution to see if this course is accepted.

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 Education Program office at Room 308, Main or call (616) 234-3848.



GEOGRAPHY:

Geography is devoted to studying the relationships between people and places. Both the natural environment and society are closely examined so geographers can determine the “why” of “where.” Knowledge of both physical and human geography is important, and several geography courses are offered at GRCC that provide a firm foundation in the field. These courses transfer to a number of programs at four-year colleges and university.



GERONTOLOGY: (code 817)

Suggested GRCC Program: Certificate

The study of the field of aging, which is called gerontology, is defined as the study of the process of aging: biological, behavioral and social aspects of later life. The field of aging is multi-disciplinary, and focuses on basic understanding of processes, programs, and policies that involve an aging America.

With the older population growing twice as fast as the general population, there is an increasing need for knowledgeable, experienced and compassionate individuals to provide assistance and support to older adults and their families. The demand for qualified individuals to work in the field of gerontology is expected to increase much faster than average due to the growth of the aging population and programs designated to provide services to older persons.

GRCC’s Gerontology Certificate Program is designed for persons who wish to focus on their skills in gerontology. It is a multi-optional curriculum for a wide range of students: (1) those who wish to obtain a certificate in gerontology only; (2) those who choose to obtain a certificate in gerontology along with another degree; or (3) those who have baccalaureate or advanced degrees, other professional degrees, or professional certification and wish to obtain a certificate in gerontology. This added credential could enhance employability and job performance in many fields.

The Gerontology Certificate Program includes core courses with specific gerontology classes and seminars related to issues and concerns of aging. It also includes electives from occupational support courses and a supervised practicum including field placement and classroom seminar. The supervised practicum of 120 hours is required to meet national standards.

The GRCC Gerontology Certificate Program is designed to follow a career ladder approach for students who do not have associate, baccalaureate, advanced or professional degrees. This means that community college students can earn a certificate in Gerontology that compliments an associate degree in a different field. This allows students to begin an educational program that meets their specific occupational interests while also earning credit toward a related 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.

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

GERONTOLOGY - continued

SUGGESTED SEQUENCE:**Core Gerontology Requirements:**

		Contact	
		Credits	Hours
First Semester			
BA 101	Business and Technical English 1 OR	3	3
BA 102	Business and Technical English 2	(3)	3
GO/SO 261	Growing Old in a New Age	3	3
GO/SO 262	Aging in America	3	3
GO 282	Gerontology Practicum I	4	4
— —	Electives	3	3
		16	
Second Semester			
GO 203	Physical/Mental Health and Aging	3	3
GO/SO 263	Death and Dying	3	3
GO 283	Gerontology Practicum II	4	4
— —	Electives	6	6
		16	
Total Credits		32	

Recommended Electives to Choose from:

GH 120	Therapeutic Relationships	3	3
SO 205	Social Work	3	3
PY 201	General Psychology	3	3
PY 232	Developmental Psychology	3	3
CD 120	Adult Development	3	3
COM 135	Interpersonal Communication	3	3
WE 156	First Aid	1	

**HISTORY:**

As a field of study, history provides the context with which we define our relationship with our local community, our nation, and the world. History offers an ordered account of past experiences and their significance in our present lives. Knowledge of the past and an understanding of current events enables us to link causes and effects, to perceive what we must maintain or change, and to better analyze political, social, cultural, and economic events to our greatest advantage. GRCC offers a number of courses in U.S. History, Western Civilization, African American History, and World History.


JUVENILE SERVICES: (Code 153)
 (formerly Youth Services)
Suggested GRCC Program:

Associate in Applied Arts and Sciences or Associate in Arts

Juvenile service workers help children and adolescents in corrections or human service settings. Those in this field may work in juvenile courts, juvenile detention centers, residential homes for youth, 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 Grand Rapids Community College Juvenile Services program coordinator concerning degree requirements for specific jobs.

Students in Juvenile Services may qualify for either the Associate in Applied Arts and Sciences (AAAS) degree or the Associate in Arts (AA). Those who wish to earn the AA will need to meet the communication, humanities, and natural science requirements for that degree.

Courses may be taken in any order, as long as all requirements (including prerequisites) are met.

		Contact	
		Credits	Hours
EN 100	College Writing OR	(3)	4
EN 101	English Composition 1	3	3
EN 102	English Composition 2	3	3
CJ 105	Introduction to Corrections	3	3
CJ 110	Introduction to Criminal Justice	3	3
PS 110	Survey of American Government	3	3
CJ 115	Client Growth and Development	3	3
SP/CJ 122	Spanish for Criminal Justice	3	3
CJ 140	Juvenile Delinquency	3	3
WE 140	Personal Defense	1	2
CJ 145	Juvenile Corrections	3	3
WE 156	First Aid	1	2
PY 201	General Psychology	3	3
CJ 221	Correctional Institutions	3	3
PY 234	Adolescent Psychology	3	3
CJ 237	Legal Issues in Corrections	3	3
CJ 243	Methods of Interviewing	3	3
CJ 245	Substance Abuse	3	3
CJ 246	Alcohol Use and Abuse	3	3
CJ —	Internship 1	3	3
— —	Natural Science Elective **	4	5
— —	Natural Science Elective **	4	5
— —	Humanities Elective **	3	3
(Recommend COM 131 and COM 135)			
Total Credits/Contact Hours (for AAAS)		64	68/69
Total Credits/Contact Hours (for AA)		69	73

** The AA degree also requires 8 credits of natural science (one course of which must include a laboratory) and 8 credits in humanities.

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LAW ENFORCEMENT:

(Code 808 & 809)

Suggested GRCC Program:

Associate in Applied Arts and Sciences or Associate in Arts

**Contact: Police Academy Director
(616) 234-3568**

The Law Enforcement program is a pre-service, academy program that prepares students to become qualified police officers. Most police agencies in Michigan now require that an individual be eligible to be licensed prior to applying for a law enforcement position. This means 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).

Enrollment in the Police Academy is restricted to students who meet requirements set forth by MCOLES. Students must verify their eligibility for licensing at the beginning of the fall semester with GRCC Police Training Director. Students in Law Enforcement may qualify for either the Associate in Applied Arts and Sciences (AAAS) degree or the Associate in Arts (AA). The scheme below is the requirements for the AAAS degree. Those who wish to earn the AA should take care that they meet the communications, humanities, and natural science requirements for that degree. Refer to the group distribution requirements for the Associate in Arts Degree in the front of the GRCC Catalog.

The following scheme is presented as a guide only. Academic courses must be taken before any Police Academy courses. Courses with MCOLES objectives must be taken within a one-year time period. Taking all of the classes listed in the “GRCC and Law Enforcement Academic Requirements” and “Police Academy Classes” will lead to an Associate in Applied Arts Degree (AAAS).

GRCC and Law Enforcement Academic Requirements

The Police Academy begins in January. Those interested should contact the Director by April. Students who do not have an Associates Degree of higher from an accredited college or university must complete (or transfer to GRCC) the academic courses before taking any of the Police Academy Classes. Exceptions or waiver of these requirements are considered by the Police Academy Director and/or the Criminal Justice Department Head.

**Contact
Credits Hours**

ACADEMIC COURSES

EN 100 College Writing OR	(3)	4
EN 101 English Composition 1	3	3
EN 102 English Composition 2	3	3
CJ 110 Introduction to Criminal Justice	3	3
CJ 111 Criminology	3	3
SP/CJ 122 Spanish for Criminal Justice	3	3
PS 110 Survey of American Government	3	3
BI 117 General Human Anatomy & Physiology	4	5
Natural Science Elective **	4	5
Humanities Elective**	3	3

(Recommend COM 131 or COM 135)

POLICE ACADEMY CLASSES

CJ 150 Introduction to Traffic	3	3
CJ 151 Traffic Accident Investigation	2	2
CJ 152 Police Driving Techniques	3	4
CJ 165 Police Physical Training #	2	4
CJ 166 Police Defensive Tactics	2	4
CJ 167 Police Physical Skills & Wellness	2	2
CJ 175 Use of Firearms	3	4.5
CJ 235 Criminal Law	3	3
CJ 236 Procedural Law	3	3
CJ 241 Criminal Investigation 1	3	3
CJ 242 Criminal Investigation 2	3	3
CJ 253 Patrol Operations 1	3	3
CJ 255 Advanced First Aid	3	3
CJ 257 Patrol Operations 2	3	3
CJ 259 Report Writing for Criminal Justice	2	2

INTERNSHIPS

CJ 281 Law Enforcement Internship 1	3	3
CJ 282 Law Enforcement Internship 2	3	3

**Total Credits/Contact Hours
(for AAAS Degree)**

75 83.5

** The AA degree requires 8 credits of natural science (one course of which must include a laboratory) and 8 credits in humanities.

CJ 165 fulfills the College's Wellness education graduation requirement.

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



POLITICAL SCIENCE:

Political Science is the study of power and power relationships. Our relationship to the state is often emphasized because of its sovereign authority over us. GRCC offers courses covering local, national, and international politics. Other courses focus on the structure and functions of government as well as philosophy. Students taking such courses at GRCC may transfer into a bachelor degree program majoring in political science. From there, many students may go on to work for a politician or the government. A political science major is also excellent preparation for law school.



PSYCHOLOGY:

Psychology is the scientific study of mind, brain, and behavior. Students can expect to explore a range of topics, including memory, human development, social psychology, abnormal behavior, therapy, and more. Students can apply what they learn to their personal lives.



SOCIAL WORK:

Students enrolled in social work courses at GRCC can expect to explore the historical development of social welfare as an institution, as well as study the profession of social work as a career. Students will be introduced to interviewing, basic empathy training, listening skills, rapport-building, and information gathering, for use with individuals, couples, and families.



SOCIOLOGY:

Sociology is the study of society, including culture, social stratification, institutions, socialization, social roles, and more. Students can expect to explore such major social problems as family and generation problems, divorce, youth contra-culture, the status of women, crime and delinquency, racial, ethnic, and religious prejudice, environmental crisis, population and urban and rural problems.



WOMEN'S STUDIES:

Women's Studies is a dynamic interdisciplinary field that addresses gender formation, empowerment and psychology, and basic issues of social justice. Used as an academic theme of study at Grand Rapids Community College, Women's Studies is rigorous and active education at its finest, empowering students to develop their awareness of the social construction of gender even as they engage in personal and intellectual growth. Our courses are useful for all students envisioning careers in teaching, business, psychology, counseling, with a wide variety of other career choices. At present, our curriculum includes one introductory class and two cognates, including English 278 (Women and Literature) and Gender and Communication (COM 235), but other courses are being developed now. Watch us grow!

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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 have careers in this path. You may be fond of outdoor activities, have a strong interest in living organisms, and have the following personal traits:

- Endurance
- Independence
- Organization
- Rational/logical thinking
- Physical stamina
- Aptitude for science
- Analytical thinking
- Critical thinking

Careers related to natural resources, agriculture, and the environment are:

- Astronomer
- Meteorologist
- Landscape Architect
- Food Scientist
- Toxicologist
- Game Warden
- Groundskeeper
- Zoologist
- Biochemist
- Chemist
- Horticulture Worker
- Surveyor



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 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.

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 —	Computer Elective	2	
EN 100	Writing † OR	3	4
EN 101	English Composition 1 †	(3)	3
MA 131	Precalculus	5	5
		16	

Second Semester

		Credits	Contact Hours
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	4	7
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Second Year

Fourth Semester

PH 125	College Physics 1 ††	4	7
CM 241	Biological Chemistry	4	5.5
COM 131	Fundamentals of Public Speaking OR	3	3
COM 135	Interpersonal Communications	(3)	3
— —	Elective **	3/4	
		14/15	

Fifth Semester

PH 126	College Physics 2 ††	4	7
CM 252	Polymer Chemistry	3	4
EN 249	Technical Writing	3	3
— —	Elective **	3/4	
		13/14	

Total Credits **63/65**

*# 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.

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.

† The two-course EN sequence may be replaced by the BA 101 and BA 102 sequence for students who are seeking the AAAS degree.

** Students seeking an AA or AS degree should select Social Science and Humanities courses to help meet their graduation requirements.

†† PH 125 and PH 126 may be replaced by PH 245 and PH 246 if the student has sufficient mathematics background.

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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:

		Credits	Contact Hours
First Semester			
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	4	7
CO —	Computer Elective	2	2
		6	
Total Credits		30	

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

* 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.



WATER PURIFICATION TECHNOLOGY: (Code 650)

Suggested GRCC Program:

Associate in Applied Science

This program is operated in cooperation with Bay Community College, Escanaba, Michigan. The Associate in Applied Science Degree is awarded by Bay Community College.

Students in Water Purification Technology take their first year of college classes at GRCC and their second year at Bay Community College in Escanaba, Michigan. (The second half of the last semester, however, is spent at a cooperative education work site as close to the student's home as practical.)

Increasingly stringent regulations on water quality and treatment have increased the need for trained technicians in this field. Water and wastewater treatment operators control processes and equipment for removing solid materials, chemicals, and organisms from the water or for rendering them harmless. By operating and maintaining the pumps, pipes, valves, and processing equipment of the treatment facility, zoperators 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.

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

WATER PURIFICATION TECHNOLOGY - continued

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 and Career Center and on-line at www.grcc.edu.

Continuing Education

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Welcome to Continuing Education and Professional Development at Grand Rapids Community College

Continuing Education and Professional Development (CEPD) offers a challenging array of innovative programs, workshops and non-credit courses. Our goal is to deliver learning opportunities through a variety of instructional formats, and provide flexibility for the modern lifelong learner. We invite you to explore our dynamic offerings.

Through partnerships, we offer everything from a one hour workshop to a year-long certificate program. We are authorized to provide Continuing Education Units (CEUs) through the International Association of Continuing Education and Training (IACET), representing the highest quality standards in the industry.

Whether your goal is to expand and improve your career skills, acquire certifications or re-certifications, or just want to learn something new, we can help. If you don't find what you are looking for in this catalog, or on our Website, please let us know as we are continually adding workshops and seminars to better serve the learning needs in our community.

PROGRAM OVERVIEW

Professional Development

Current professional development workshops are found in these categories:

- Automotive re-certifications
- Allied Health
- Construction Trades
- Dental
- Innovation
- Manufacturing
- Plastics
- Quality

Since workshop topics are frequently changing, to get the latest information about what is available now, please visit our website at www.grcc.edu/continuingeducation or call us at 234-3400.

Online Courses/Ed2go

While GRCC is accredited by North Central Accreditation Association, courses offered and/or certifications in partnership with Thomson Learning Systems are not authorized by GRCC to receive credit or Prior Learning Assessment recognition for the college or for transfer from GRCC to any other institution, or financial aid.

If you are thinking you don't have time to take a class, or what we offer through the classroom doesn't work with your schedule, you should consider an online class with Ed2GO.

Through a national partnership with the industry leader in online learning, Thomson Learning, we can offer over you 300 fully interac-

tive online non-credit courses that are taken entirely over the internet. Ed2Go is the world's largest provider of online courses for adults. All of these courses include expert instructors, many of whom are recognized authors. Through Ed2Go, new instructor-facilitated courses start each month. All courses run for six weeks (with a two-week grace period at the end). Courses are project-oriented and include lessons, quizzes, hands-on assignments, discussion areas, supplementary links, and more. You can complete any of these courses entirely from your home or office and at any time of the day or night.

Topics range from Anatomy to Web Design; including, health care, personal interest, and business administration. These courses are affordable, convenient, fun, fast, highly interactive and geared just for you.

Ed2Go instructors are famous for their ability to create warm and supportive communities of learners. It's no wonder that many long-lasting friendships have formed in our lively and intelligent discussion areas.

Registration is fast, easy and available via the Ed2Go website at www.ed2go.com/grcc. Join nearly a million satisfied users around the country who have a positive learning experience with Ed2Go.

Here is just a sample of the types of courses that we have to offer:

GRCC's Ed2Go Top Ten

- Introduction to Microsoft Excel 2003
- Introduction to PC Troubleshooting
- Accounting Fundamentals
- Speed Spanish
- Professional Sales Skills
- Purchasing Fundamentals
- Photoshop Elements 4.0 for the Digital Photographer
- Intermediate Microsoft Access 2003
- Intermediate Microsoft Excel 2003
- Grammar Refresher
- Administrative Assistant Fundamentals

Here is what some students are saying:

After taking the course, Get Assertive! one participant said, "This course has taught me how to use my power of assertiveness to make changes in my life, making it happier and more fulfilling. I strongly recommend both this course and instructor."

After taking Introduction to Algebra... "This online course was wonderful. Having quizzes available for studying was a big help and it eliminated my fear of taking the final. Each lesson kept my interest and it wasn't just a bunch of numbers."

Life Enrichment

At GRCC, we are passionate about lifelong learning. We believe that in order to have a healthy and fulfilling life, learning must continue throughout our lives.

Summer Fun Series

During the summer months, Continuing Education and Professional Development offers lots of fun workshops for kids of all ages! We continue to add to our list of offerings each year which has included: cooking classes for kids, teens and adults; as well as yoga, photography, computer animation, sustainable building practices, life history, dance, and more! Our schedule comes out in early April and will be posted on our website. Classes range in price and length so check it out! If you have an idea for a great summer workshop, e-mail it to us at continuingeducation@grcc.edu

Life Learning Network

Continuing Education also offers many opportunities for life enrichment including our new membership organization, the Life Learning Network.

The Life Learning Network is an innovative program designed to enhance the lives of those ages 45 and older through ongoing learning options supporting individual goals for personal and professional development and overall healthy living.

As our community grows and matures, there is a tremendous need and desire to continue to grow and learn about the world around us. Membership in the network offers both educational opportunities, including online classes, workshops and seminars, member only exclusive events and much more.

Many of our workshops are developed especially for our network members and as our network grows our offerings will be directed by our membership.

You can choose to become a member of the network at different levels depending on the benefits that appeal to you. To learn more about the different membership levels and benefits check out our website at www.grcc.edu/lifelearning

How do I get started?

Registration/Payment

There are several ways to register for a workshop through Continuing Education and Professional Development. Payment is due at time of registration. Registration is not considered confirmed until payment has been received.

Website:

www.grcc.edu/continuingeducation

E-mail:

continuingeducation@grcc.edu

Phone:

(616) 234-3400

Mail:

Grand Rapids Community College
Continuing Education
143 Bostwick Avenue NE
Grand Rapids, MI 49503-3295

Checks should be made payable to:

Grand Rapids Community College

Cancellation Policy

In the event that a participant needs to cancel enrollment, notification of cancellation is required 2 weeks prior to the start of each course.

When necessary, refunds are processed the last day of the month, according to this schedule:

- Cancellation notice provided 2 weeks prior to workshop—100% refund
- Cancellation notice provided 9 working days prior to workshop—no refund

Other Resources

There are several areas of GRCC that offer additional types of non-credit workshops, training, and certifications. For more information on what these other areas of the college have to offer please refer to the following departments.

For business and employee training please contact **Training Solutions**

For occupational skills training and/or re-training please contact **Job Training**

For many offerings for those 65 and older please contact our **Older Learner Center**

Career Resource and Development Center

JOB TRAINING

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INTRODUCTION

Programs offered through Grand Rapids Community College Job Training help you to focus on your educational and vocational needs for gaining the job skills that will enhance your employment opportunities.

In our hands-on training programs, you are taught to accomplish specific learning objectives that have been developed with the help of advisory committees from local businesses. Classes are 18 weeks in length, and enrollment begins each month. Upon completion of your programs, you will receive job placement assistance. In fact, most 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.

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%. Full description on page 89.

Residential Construction - 18 weeks

The Residential Construction Trades program is currently under development. For more information about the program, contact the Job Training Coordinator at (616) 234-3800 or the GRCC Web site www.grcc.edu/jobtraining.

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. Full description on page 73.

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. Full description on page 101.

Computer Applications Specialist - 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. Full description on page 74.

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. Full description on page 103.

Introduction to Construction - 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. Full description on page 73.

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.

For current Job Training In-District and Out-of-District tuition rates please go to www.grcc.edu or call (616) 234-3800.

Refunds

Refund policy for all programs offered by GRCC Job Training:

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

Please be advised that dropping a program may permanently affect eligibility for financial aid.

Financial Aid

The Job Training staff will assist you in accessing financial resources to pay the educational costs of enrollment in a program. The staff realize that you and/or 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.

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 upon your enrollment.

STUDENT SERVICES

Job Placement

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 to 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.

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.

CONSTRUCTION TRADES – Apprenticeship Training

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GENERAL INFORMATION

The GRCC/Tassell M-TEC® Construction Trades program is a non-credit construction training program for men and women who want to begin or advance their careers in the construction industry and for contractors who want to train their existing employees. Most of the Construction Trades programs are accredited through the National Center for Construction Education and Research (NCCER), using a nationally recognized competency-based curriculum taught by certified craft instructors.

A traditional classroom approach, following the standard college semester, is currently utilized in most of the courses. Some courses are offered using an Independent Study approach, and some courses are offered that do not follow the standard college semester schedule.

Students who have finished a program of study can apply to have their Certificate of Completion articulated into college credit if they intend to seek an associate or bachelor degree.

Please see the Web site for more information at www.grcc.edu/constructiontrades.

ENROLLMENT INFORMATION

Admissions

A first-time student at GRCC needs to complete a Construction Trades Application form and the NCCER release of information form and fax them to the Construction Trades Department at (616) 234-3017. The student will then be issued a Student I.D. number that can be used in the future to register for courses at GRCC by contacting the Construction Trades Department at 234-3009.

Tuition

Please see the Web site for current tuition rates.

Payment Procedures

A Payment Schedule for each course is listed in the Construction Trades Course Schedule. Students are encouraged to pay for courses at the time of registration to avoid being dropped from the course or having the course cancelled due to low enrollment. All tuition must be paid by the tuition due date, or the student will be dropped. Once dropped, a student can re-register for a course if it is available, but payment must be made at the time of registration.

Refund Policy

All refunds of tuition and fees will be based on a student's initiating the drop of a class(es) by calling the Construction Trades Department at 234-3009. 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 the class 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 drop is initiated by the student. 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

ACADEMIC POLICIES

Achievement Scale

Most of the Construction Trades Department programs are accredited by the National Center for Construction Education and Research (NCCER). The NCCER competency-based curriculum requires students to pass each module Written Test with a minimum score of 70%. Most modules also have a Performance Test that is scored as Pass/Fail. Students scoring below the minimum of 70% on Written Tests and/or receiving a Fail on a Performance Test will be retested on that module until a Satisfactory Achievement is recorded.

Achievement Scale (Grade)/Description

S90	Satisfactory, student has mastered a minimum of 90% of the course objectives
S80	Satisfactory, student has mastered a minimum of 80% of the course objectives
S70	Satisfactory, student has mastered a minimum of 70% of the course objectives
U	Unsatisfactory, student has not mastered a minimum of 70% of the course objectives
W	Withdrew from the course

NOTE: Students who repeatedly score below the 70% level on Written and Performance Tests will be evaluated for tutoring services or remedial courses before continuation in the program.

Attendance

Traditional courses are typically based on a 15-week/60 hour schedule. Attendance in the Construction Trades courses is essential to success and indicates dependability to prospective employers. Employers, in conjunction with the Bureau of Apprenticeship and Training, and GRCC advisory committees have determined that a student can have no more than two absences in one course. On the third absence, the student will be dropped from the course unless the student has made prior arrangements with the instructor to make up the time and/or work.

Classroom Requirements

Construction Trades students must adhere to all classroom/lab rules of conduct and safety requirements. Students should dress according to the standards set by employers for the trade they are training in.

In areas such as shops and laboratories where there may be potential for accidental injury, students will be required to wear safety glasses and/or other protective clothing. The instructor will clarify these requirements upon enrollment.

Programs

- Carpentry
- Electrical
- Plumbing
- Sheet Metal
- Sprinkler Fitting

See Web site for more information.

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PL	- PHILOSOPHY	190
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The college year is composed of two semesters and summer sessions. Units of academic study are recorded in credit-hours. A year-long (Fall - Winter - Summer) 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:

AD 230
Mental Health Nursing (4/7)
Prerequisites: AD 175, AD 158 Corequisite: AD 248 & PY 232 — Complex mental health disorders are discussed. Mental health concepts are 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.

Course Title points to AD 230
Course Number points to AD 230
Prerequisites immediately precede the course description. The Prerequisite must be taken before registering for the class. points to Prerequisites: AD 175, AD 158
Course Credit/Contact Hours The first number represents the credit hours for the course; the second number represents the contact hours for tuition calculation. points to (4/7)
Course Description points to the paragraph describing the course.

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 125

Medical-Surgical Nursing I (3/5)

Prerequisites: Formal acceptance into the Associate Degree Nursing Program and AD 100 & BI 121 (with a grade of “C” or better) **Corequisites:** AD 130, AD 148, & 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, PY 201, BI 121 (with a grade of “C” or better) **Corequisites:** AD 125, 148, & BI 122 (with a grade of “C” or better) — Mental health concepts are introduced and used with the nursing process to promote mental health & 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 I (1/1)

Prerequisites: AD 100 & BI 121 (with a grade of “C-” or better) **Corequisites:** AD 125, AD 130, AD 150, & 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 II (3/5)

Prerequisites: AD 125, AD 130 **Corequisite:** AD 148, BI 121 & BI 122 (may be taken concurrently) — 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 III (4/7)

Prerequisites: AD 150, AD 148, & BI 122 **Corequisites:** AD 158 (must be taken concurrently), BI 126, or BI 127 — The nursing process is used to guide care for persons with medical-surgical needs. A continuation of AD150, 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 II (1/2)

Prerequisites: AD 148 & AD 150 **Corequisite:** AD 155 & 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 IV: The Older Adult (4/7)

Prerequisites: AD155, AD148 **Corequisite:** AD 158 — 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 230

Mental Health Nursing (4/7)

Prerequisites: AD 175, AD 158 **Corequisite:** AD 248 & PY 232 — Complex mental health disorders are discussed. Mental health concepts are 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, BI 127 (with grade of C- or better) **Corequisite:** AD 248 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 243

Pediatric Nursing (4/7)

Prerequisites: AD 230, AD 232, AD 248, PY 232 — AD 258 is required concurrently — The nursing process is used to care for children and families; focuses on effects of illness and hospitalization; growth and development of the child; and responses of the family. Emphasizes family-centered care. Clinical experience with pediatric clients is provided in structured health care and community settings.

AD 245

Medical-Surgical Nursing V (6/10)

Prerequisite: AD230, AD232, AD248, PY232 **Corequisite, AD 258 (must be taken concurrently)** — The nursing process is used to care for persons with complex health needs that may involve major life-style changes. Clinical experience is directed toward providing total care for complex and critically ill adults in acute care settings.

AD 248

Community/Transcultural Nursing III (1/2)

Prerequisites: AD 175, AD 158 **Corequisite:** AD 230, AD 232, & 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 250 Management of Nursing Care (3/7)

Prerequisites: AD243, AD245, AD258

Management concepts and the nursing process are used to provide care for groups of persons and families. Critical thinking is stressed; course focuses on delegating care and directing personnel. Graduate behaviors are discussed. Clinical experience is provided so that students work cooperatively with experienced registered nurses in structured health care settings.

AD 258 Community/Transcultural Nursing IV (1/2)

Prerequisites: AD 230, AD 232, AD 248, PY 232
Co-requisite: AD 243 & AD245

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. Emphasis will be given to issues of diversity within the health care work force.

ANATOMY AND PHYSIOLOGY (See Biology)

AN – ANTHROPOLOGY

AN 201 Introduction to Anthropology (3/3)

The biological, cultural, linguistic, and archaeological study of humans. Human relationship to other species, living and dead, will be examined, as well as the nature and diffusion of culture. Comparisons between current and pre-industrial cultures will be emphasized.

AN 205 Introduction to Archaeology (3/3)

An introduction to prehistoric and historic archaeology, including explanations of methodologies, major archaeological discoveries, and an analysis of the relationship between past and present cultures.

AN 210 Cultural Anthropology (3/3)

Examination of the methods and theories behind cultural anthropology. Emphasis will be placed on non-western and traditional cultures. The cultural patterns of various peoples and the impact of those practices on societies will be the focus of the course.

AN 280 The Culture and History of Native Americans (3/3)

Examines the various cultures and histories of Native Americans, concentrating on those cultures found in North America. Examines the prehistoric background, contact with Europeans, and the changes that took place in Native cultures as a result of that contact. Also examines the current cultural conditions of Native Americans.

AN 285 The Archaeology of Ireland (3/3) **Co-requisite: Enrollment in the Irish Studies travel experience** — An overview of Irish

archaeological remains and theoretical analysis of the Paleolithic, Neolithic, and historical eras as they relate to Ireland. This course is part of the Irish travel studies experience and is open only by permission as a part of the travel program which takes place in the summer. Students will do course work on-line here first, then travel to Ireland for approximately two weeks, where they will visit a variety of archaeological sites.

AP – APPRENTICESHIP TRAINING (See Manufacturing)

AR – ARCHITECTURE

AR 103 Building Codes and Standards (2/2)

The application of building codes is studied referencing the Michigan Building Code. Barrier-free and local zoning codes are reviewed. Two hours lecture. Offered Fall and Winter semesters.

AR 104 Residential Design (4/4)

Prerequisites: AR 119 and AR 105 — Students learn standards for planning and designing 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 Term.

**AR 106
Construction Materials 2 (3/4)**
Students will apply fundamental construction principles and the use of materials and methods for both commercial and residential building based on the Construction Specification Institute's (CSI) Master format. This course is a continuation of AR 105, Construction Materials I. This course will be limited to C.S.I. Divisions 6,7,8,9,15,16, sound control, heat loss, and a brief review of Divisions 10-14.

AR 111 Orientation to Architecture (2/2)

An introductory course to Architecture which exposes students to the history of contemporary architecture, design, landscape architecture, interior design, civil engineering, urban planning, and the profession of architecture.

AR 112 Mechanical & 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 only.

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.

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 only.

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 produce working drawings. Six hours lecture/lab. Offered Fall only.

AR 125

Print Reading and Specifications (3/3)

Students will apply fundamental principles, methods and techniques in the reading, interpreting, and understanding of 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)

Students learn how to create floor plans with walls, windows, and doors using 3D CAD. Furniture, fixtures, equipment, roofs, and floors are added to architectural plan. Building elevations, sections, and perspectives are generated, and building drawings created. Knowledge of 2D Computer Aided Drafting and building materials required. Four hour 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 only.

AR 202

Architectural Graphics-2 (3/4)

Prerequisite: AR 201 — Presentation methods, including linework, parallel 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 only.

AR 207

Construction Surveying (3/4)

Basic surveying practices include the operation of surveying instruments and equipment, measurements of lines and angles, leveling operations, taking field notes and construction techniques.

AR 208

Design Studio: Commercial Building Design (4/4)

Prerequisites: AR 105 and AR 119
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.

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.

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)**

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)**

Prerequisites: AT 130 and AT 140 — 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)**

Basic drawing techniques, applied to still life and portrait study, using black and white media. Six studio hours.

AT 141**Drawing 2 (3/6)**

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)**

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)**

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)**

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)**

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)**

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 I (2/4)**

Prerequisites: AT 130 Design 1, AT 140 Drawing 1 — Traditional painting techniques, applying color sensitivity to still-lives, and other subjects, using oil and/or acrylic. Four studio hours.

AT 215**Painting II (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)**

Mixed media and non-traditional watercolor techniques emphasizing originality and experimentation. AT 200 is not a prerequisite for this course. Drawing 1 is strongly recommended to increase student success in this course. Four studio hours.

AT 219**Landscape Painting and Drawing (2/4)**

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. Drawing 1 is strongly recommended to increase student success in this course. 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)**

Jewelry fabricating and forging techniques of traditional and contemporary design. Four studio hours.

AT 255**Art for the Elementary Classroom (3/4)**

A combination lecture and studio course designed to provide preservice 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)**

A comprehensive mediated lecture/discussion of the major architectural styles, master buildings, and master architects from prehistory to post Modernism today. Structures are examined in terms of design, style, construction technologies, site considerations, functionalism, symbolism, and historical/social significance/impact. Special attention is given to Modernism and its historical antecedents. (Weekly chapter-length readings are required).

AT 271**Modern Art: 1850 - Present (3/3)**

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. (Weekly directed focused readings are required).

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, memos, e-mail, 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)**

Recommended: BA 101. A technical writing course for business and technical students. Topics 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)**

Recommended: Keyboarding and prior computer knowledge. Introduces business and non-business majors to the private enterprise system; the role of business in global markets; the establishing, financing, and managing of businesses; the producing and marketing of goods and services; careers in business; and the technology used to compete in business.

BA 105**Entrepreneurship (3/3)**

This course introduces the student to the exciting world of entrepreneurs and the entrepreneurial process from both a historical and a research perspective. The role and nature of entrepreneurship as a mechanism for creating new ventures and affecting economic development are presented. This course will introduce important concepts in entrepreneurship and help the student see the entrepreneurial process through the eyes of the entrepreneur. Students will delve into the financial and psychological characteristics of entrepreneurs. In this course students will also investigate viable new ventures.

BA 106**Starting a Business (3/3)**

The course centers on the business planning process, opportunity recognition, business concept development, feasibility testing, and the Business Plan. The Business Plan for a new venture includes four major sections: Management and Organization Plan, Product/Service Plan, Marketing Plan, and Financial Plan. Students gain the knowledge, skills, concepts, and strategies relevant for start-up and early-stage entrepreneurs. A practical, hands-on approach encourages students to immerse themselves in the vision, research, and planning aspects of a new venture.

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 is also included.)

BA 133**Business Word Processing 1 (2/2)**

Prerequisite: BA 130 with a grade of C or higher or touch keyboarding at a rate of at least 25 words a minute — Introduces the formatting of personal communications, reports (including footnotes and endnotes), business letters, and tables; and further develops speed and accuracy of computer keyboarding.

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 key-boarding 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 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 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 158**Accounting for Entrepreneurs (4/4)**

BA 158 is an introduction to accounting for entrepreneurs/small business owners. The course will emphasize the use of financial and managerial accounting information in the decision making process, and will include a computerized accounting lab component using Quickbooks. This course is required for the Entrepreneurship Certificate. This course is not a substitute for BA 256 or BA 257.

BA 160**Computerized Accounting (2/2)**

Recommended: BA 156 or BA 256

Students receive hands-on instruction in a computerized accounting program suited for very small and home-based businesses (Quickbooks). 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. Course examines the necessary considerations in starting a retail business. 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 Communication (3/3)**

Recommended: BA 101 or EN 101 — 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 (4/4)**

Prerequisites: BA 136 and BA 145

Students will use Microsoft Office applications to produce letters, memos, manuscripts, tables, and other executive communications. Production and timed writings are used to build and measure production rates.

BA 236**Machine Transcription (2/2)**

Prerequisites: BA 136, BA 145 — Students will use Digital Voice Recording equipment and software, computers with word processing software, and selected reference materials to produce mailable, hard-copy business documents.

BA 245**Records and Information Management (3/3)**

Prerequisite: BA 145 or knowledge of Microsoft Access for Windows — 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.

BA 248**Contemporary Office Procedures (3/3)**

Prerequisite: BA 136 or equivalent — 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 stockholders' 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)**

Prerequisites: BA 256 or equivalent, with a grade of C (not C-) or better strongly recommended — A study of accounting for corporate organizations; short and long-term investments, including consolidations; long-term borrowing, including amortization procedures; cash flow analysis; survey of cost accounting; standard costs; budgeting; managerial accounting techniques; and cost-volume-profit analysis.

BA 260**Computerized Accounting 2 (2/2)**

Recommended: 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 (Peachtree), 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, receivable, inventory valuation 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 integral part of their classroom responsibility.

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)****Recommended:** 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)****Recommended:** 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.

BI – BIOLOGY

NOTE: For a biology major sequence, BI 151 and BI 152 are required

BI 101**General Biology (4/5)**

A survey of biology that satisfies the general education requirement for a 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 course in 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.

BI 103**Survey of Plant Biology (4/6)****Prerequisite:** C or better in high school

biology — Survey of Plant Biology is a specialty course designed to give students a broad background in the diversity, ecology, and evolution of plants, algae, and fungi. The study of plants will incorporate information from the sub-disciplines of anatomy, morphology, development, ecology, physiology, paleobotany, systematics, and evolution. This course may be required for students majoring in crop and soil sciences, forestry, horticulture, natural resources, environmental studies, or biology and will fulfill a science requirement for all others. This course should only be taken by the biology, pre-med, or pre-pharmacy major upon completion of BI 151 and BI 152. The course integrates lecture and laboratory into two three-hour sessions per week.

BI 104**Animal Biology (4/6)****Prerequisite High School Biology: or Biology 101 highly recommended**

— Biology 104 (Animal Biology) is a comprehensive survey of the animal-like protists, mesozoa, and metazoa, incorporating broad and unifying biological and evolutionary concepts. Animal Biology stresses the classification, evolution, ecology, behavior, and anatomy and physiology of representative species of major phyla of unicellular animal-like protists, mesozoans, and metazoan animals. There are three hours of combined lecture and laboratory held twice per week for a total of six contact hours. This course is appropriate for anyone interested in the study of animals and also serves as an additional course of study that may be taken by biology, pre-med, or pre-pharmacy majors after completion of Biology 151 (Cells, Molecules, and Genes).

BI 117**General Human Anatomy and Physiology (4/5)**

Prerequisite: College level proficiency in reading, reading comprehension, and writing — BI 117 is a structural and functional approach to the human body through the 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 body. 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. Lab fee.

BI 121**Human Anatomy and Physiology #1 (4/5)**

Prerequisites: C or better in high school biology, BI 101, or BI 117 required. **Cannot concurrently enroll in BI 122. Recommend: C or better in high school chemistry or CM 100. Biology 121 is 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, nervous, and an introduction to the endocrine system. This course satisfies the general education requirements for natural science and is required for most allied health and medically 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. Lab fee

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

Prerequisites: Completion of BI 121 with a minimum of C-. **Biology 122 is the second of a two-semester course sequence** — This course covers a structural and functional approach to human biology with an emphasis upon the circulatory, lymphatic, respiratory, digestive, urinary, endocrine and reproductive systems. 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. Lab fee

BI 125**Personal Health (3/3)**

This course is designed to expand the student's knowledge of many health topics. The principles of personal health are studied, including the physical, emotional, social, intellectual, spiritual and occupational concepts that influence health and wellness. Students will also be able to examine their attitudes toward health issues and decide how they can modify their behaviors 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 of lecture per week in a regular semester.

BI 126**Microbiology & 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: BI 101 or BI 121 or BI 122 and CM 101 — 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**Introduction Cells, Molecules and Genes (4/6)**

Prerequisites: C or better in high school biology and chemistry or 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.

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 204**Studies in Natural History 4 (4/4)**

Biology 204 (4 credits) is a combination of lecture, laboratory, and field-based experiences introducing the student to the biodiversity, ecology, and natural history of selected ecosystems throughout the world. On-site visits to the ecosystems under study will allow the student to study the biodiversity of the ecosystem 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 are required as integral parts of this course. NOTE: the cost of transportation, food, and lodging, and the cost of various excursions will be borne by the student. Each course is limited to 12 persons.

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)**

Pre-requisites: BI 101, or BI 103 or BI 104.
Recommended: MA 104 — This is a general ecology course that is recommended for students majoring in biology, natural resources, forestry, soil science or 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. Students are required to provide their own transportation to and from field site locations. Three hours lecture, three hours lab.

BI 232**Genetics (3/3)**

Prerequisite: C or better in BI 151 or equivalent — This is an integrated study of classical transmission genetics and molecular genetics which emphasizes the human organism and draws attention to the evolutionary relatedness of all organisms. Major topics include Mendelian principles, the chromosomal basis of inheritance, the structure and function of DNA, the tools of biotechnology and genomic analysis, the regulation of gene expression, and genetic analysis of populations. Three hours of lecture. Offered Winter Only.

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.

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)**

Students plan menus for different types of commercial and institutional food service operations, and study 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: CA105 — Students learn principles, procedures, and standards of quantity and institutional-style cooking. Students prepare entrees, soups, salads, sandwiches, and vegetables for the College's public restaurant, The Heritage. The proper use of tools and equipment is emphasized.

CA 115**Table Service (5/12.5)**

Prerequisite: CA 105 — Principles of American table service are studied and practiced in the College's public restaurant, The Heritage; includes dining room management, customer relations, and an exploratory introduction to several other types of table service.

CA 124**Retail Baking (5/12.5)**

A laboratory based course featuring production techniques unique to the fast growing in-store deli/bakery industry. Frozen breads, rolls, cookies, Scoop'n Bake muffins, 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**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**Advanced 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**Wedding Cake Design (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 CA 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 151**Introduction to Wine (2/2)**

Department Consent Required — 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 160**Ice Carving Basics (2/2)**

The student will be introduced to the basics of ice carving. This course will include the safety procedures involved in ice carving, the tools and equipment used in making and carving ice and the basic skills needed to carve ice. Upon completion the student will be able to carve an identifiable carving using one standard block of ice.

CA 180**Cooperative Education In Culinary Arts (3/3)**

Prerequisite: CA 104, 105, or 124 and prior written approval of Co-op Coordinator
Students participate in a 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 & Financial Analysis (3/3)**

Prerequisite: CA 140 **Hospitality Forms and Formulas** — 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 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)**

Students learn the principles of marketing as applied in today's hotel-motel and restaurant industry. The student will learn how to do product and market analysis, how to develop marketing plan, sales promotion and advertising methods, public relations and marketing management, as it relates to the hospitality industry.

CA 235**Beverage Management (2/2)**

Department Consent Required — 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 & 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 "à 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, 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 viniculture of the regions being studied. An instructor-led study tour of the foreign country, by the students, is an essential requirement of the course. A travel fee will be assessed to cover related expenses.

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, intimate relationships, human sexuality, and family functioning. Provides a basis for making decisions about life styles and sexual choices in contemporary society. Emphasis is placed on changing roles, gender relationships, love, intimacy, communication, diversity of family systems, and sexuality throughout the family life cycle.

CD 118**Human Growth and Development-1 (4/5)**

Human Growth and Development is 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. This course requires two hours a week of laboratory experience with children. Three hours lecture a week and two hours of lab. 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 planning and implementation of developmentally appropriate curriculum for preschool children. Each student is assigned a lab instructor at the GRCC Lab Preschool who will assist with and evaluate weekly activities and teaching sessions planned and implemented by the student. Three hours lecture and three hours lab participation at the GRCC Lab Preschool.

CD 120**Adult Development (3/3)**

The major emphasis is on normal adult development, ages 18 through old age. Focus is on biological, cognitive, social and occupational aspects of the developmental stages of adult life. Topics include specific life tasks, research methods and interview techniques.

CD 180**Cooperative Education in Child Development (3/3)**

Prerequisite: Completion of CD 118, CD 119 or CD 210 with a grade of C- or better
CDA students participate in a cooperative program of work and learning involving area employers. Students are required to work a minimum of 225 hours a semester under a qualified supervisor at approved employment and attend scheduled class sessions.

CD 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, birth to 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)**

This course consists of three hours of lecture focusing on the practical application of current research to adult-child interactions. Theories, problems and techniques of adult-child interactions will be explored with an emphasis on problem-solving 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 Human Growth and Development with a grade of C- or better — This course focuses on literacy acquisition theory and practice from 0 to 3rd grade. Literacy development stages, factors that effect reading acquisition, and characteristics of fluent readers are included. The importance of play, schema theory, language development and reading acquisition, and assessment procedures are stressed. 20 hours of tutoring through the FACTS program at GRPS are required.

CD 270**Leadership in Early Childhood Education (3/3)**

Prerequisites: CD 118 and CD 119 — This course explores leadership in the field of early childhood. It will examine the multiple styles and theories of leadership. Topics include: assessing your own leadership style, identifying leadership opportunities in the community and state, engaging in teamwork, coaching and mentoring and use of data towards continuous quality improvement. This course meets a portion of the National Association for the Education of Young Children's accreditation requirement for center directors.

CD 280**Cooperative Education in Child Development (3/3)**

Prerequisite: Completion of CD 118, CD 119 or CD 210 with a grade of C- or better
Corequisite: CD 285 — 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. **MUST BE TAKEN WITH CD 285.**

CD 285**Assessment Tools in Child Development (2/2)**

Prerequisite: 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, a philosophy statement and documentation of the student's own teaching and educational experiences. The child portfolio segment 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 a Family Resource File. Students are not allowed to receive credit for both PY 232 and CD 118.

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)**

Department Consent Required — 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)**

Department Consent Required — 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: Introduction to Traffic
Department Consent Required — 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 (3/4)**

Department Consent Required — Police Academy 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. This course is for Police Academy students. Program enrollment or department consent is required.

CJ 165**Police Physical Training (2/4)**

Prerequisite: Enrollment in Law Enforcement Certification Program Department Consent Required — 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)**

Department Consent Required — This course is for Police Academy students who will learn techniques of unarmed self-defensive used by law enforcement officers. Students demonstrate proficiency in the MCOLES defensive tactics techniques.

CJ 167**Police Physical Skills and Wellness (2/2)**

Department Consent Required — This course covers the practical aspects and mechanics of arrest and search. Students must demonstrate police tactical techniques and application of subject control. Police health and wellness are also covered. Course includes MCOLES objectives and is open to Police Academy students only.

CJ 175**Use of Firearms (3/4.5)**

Department Consent Required — This course will introduce Police Academy students to lethal police weaponry and the policies, tactics and liabilities of their use. Students perform practical exercises using the police revolver and are required to qualify with weapons on a police range. This course is open to Police Academy students only.

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 234**Constitutional Law (3/3)**

This course surveys important aspects of the United States Constitution, with an emphasis on the protection of civil liberties and civil rights. Topics will include the freedoms protected under the Constitution for the public at large, as well as specific protections of the rights of the accused.

CJ 235**Criminal Law (3/3)**

Department Consent Required — 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)**

Department Consent Required — 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)**

Prerequisites: CJ 241 Department Consent Required — Students will be introduced to the science of criminal investigation. They will become familiar with the examination of scientific methods used in the search, collection, and processing of crime scene data. Practical exercises in fingerprinting and crime scene investigation, recording and sketching the scene are also performed. Specific kinds of crimes such as homicide, auto theft, sexual assault, child abuse/neglect, narcotics, prisoner care and treatment, and suspect identification processes will be explored.

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)**

Department Consent Required — 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)**

Department Consent Required — 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)**

Department Consent Required — 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 259**Report Writing for Criminal Justice (2/2)**

Department Consent Required — This course provides skill development and instruction in criminal justice writing. Students will learn how to use field notes, computer generated reports, narrative reports, case summaries, and professional correspondence. This course is for Criminal Justice majors. Program enrollment or department consent is required

CJ 270**Issues in Corrections (3/3)**

Department Consent Required — 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**Law Enforcement Internship 1, Corrections/Youth Serv (3/3)**

Department Consent Required — The course provides a structured and extended off-campus experience in a supervised setting for Criminal Justice Majors. Students work within a variety of professional settings that are related to their major and future career interests. Students are required to spend a minimum of 90 clock hours at their internship site.

CJ 282**Law Enforcement Internship 2 (3/3)**

Prerequisites: Student must be a Law Enforcement major. Department Consent Required — The course provides a structured and extended off-campus experience in a supervised setting for Criminal Justice Majors. Students work within a variety of professional settings that are related to their major and future career interests. In addition to the requirements of CJ 281 students will be required to complete a 10 hour service learning component. Students are required to spend a minimum of 90 clock hours at their internship site. This course is a continuation of CJ 281.

CJ 285**Corrections Internship 1 (3/3)**

Department Consent Required — The course provides a structured and extended off-campus experience in a supervised setting for Criminal Justice Majors. Students work within a variety of professional settings that are related to their major and future career interests. Students are required to spend a minimum of 90 clock hours at the internship site

CJ 286**Corrections Internship 2 (3/3)**

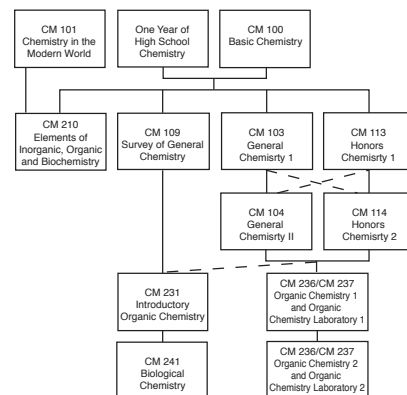
Department Consent Required — This course is a continuation of CJ 285. The course provides a structured and extended off-campus experience in a supervised setting for Criminal Justice Majors. Students work within a variety of professional settings that are related to their major and future career interests. In addition to the requirements of CJ 285, students will be required to complete a 10 hour service learning component. Students are required to spend a minimum of 90 clock hours at their internship site.

CLS – COLLEGE LEARNING STUDIES**CLS 101****Career Decision Making (1/1)**

A career decision making course for individuals who are undecided about life direction as well as career and college major goals. Primary focus will be on how to establish and maintain appropriate life direction, the basics of effective decision making, selecting a suitable program of study, overcoming barriers, setting priorities, goal-setting and applying skills learned to other life decisions.

CLS 110**Effective****Career Development (2/2)**

A course whose primary focus will be the 4-Step Career Development Process. Emphasis will be placed on life direction; mission; basic career development theories; conducting a self-assessment; work clusters; career exploration; career assessments; significant influencing factors; decision making; goals; barriers; balance; the job search; resume construction; interviewing; transitions and portfolio development.

CM – CHEMISTRY

————— Recommended Sequence

- - - - - Optional Sequence

CM 103 and CM 104 or CM 113 and CM 114 constitute a one-year sequence in general chemistry.

CM 109 (or CM 103 and CM 104), CM 231 and CM 241 fulfill the chemistry requirements for many transfer institutions granting a BSN.

CM 100**Basic Chemistry (3/3)**

Prerequisite: MA 104 — A normally non-transferable, non-laboratory course designed to prepare students for CM 103, 109 or 210. Topics include measurement, the periodic table, modern atomic theory, chemical bonding, and quantitative relationships in chemistry. Three hours lecture.

CM 101**Chemistry in the Modern World (4/6)**

Chemistry for non-science majors and some medical curriculum students designed to give students a better understanding of the relationship between science, technology, and the environment. Topics include chemical reactions, energy, organic chemistry, nuclear chemistry, acids and bases, and biochemistry. Four hours lecture/two hours lab.

CM 102**Introduction to Chemical Technology (1/1)**

This course provides an overview of Chemical Process Industries and Chemical Technology with focus on the role of the process operator and the chemical technician. Introduces concepts of safety, regulation, laws affecting the job and the industry, and quality control. Includes study skills and attitudes necessary for study of science/technology as well as means of continuing professional and personal growth. One hour lecture.

CM 103**General Chemistry-1 (4/7)**

Prerequisite: CM 100 or equivalent and MA 104 or equivalent — 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 gases, kinetics, and ionic equilibria, acids/base chemistry, thermodynamics, electrochemistry, nuclear chemistry, and a brief introduction to organic and biochemical concepts. Offered all semesters. Four hours lecture/three hours lab.

CM 109**Survey of General Chemistry (5/7)**

Prerequisites: MA 107 or equivalent, CM 100 or equivalent — CM 109 serves baccalaureate medical curriculum students and polymer technology students as a one-semester survey of the fundamental laws and concepts in chemistry. Topics covered include atomic and molecular structure, phases of matter, solutions, stoichiometry, thermodynamics, equilibrium, acid-base reactions, oxidation-reduction reactions, kinetics, and nuclear chemistry. The concepts of this course will be explored via lecture and laboratory experience. Five hours lecture, two hours lab.

CM 113**Honors Chemistry (4/7)**

Prerequisites: 'A' or 'B' grade in high school chemistry; MA 107, MA 108 or equivalent Intended for students majoring in science or engineering who have an excellent background in theory and practice (lab) from high school chemistry. This course will help students gain more depth and understanding in topics such as: the fundamental laws and principles in chemistry, atomic and molecular structure, bonding, intermolecular forces, phases, solutions, stoichiometry, and thermodynamics. Laboratory emphasis is on quantitative methods. Four hours lecture, three hours lab.

CM 114**Honors Chemistry II (4/7)**

Prerequisites: CM 113 or completion of CM 103 with a grade of 'A' — Continuation of CM 113. Topics include gas laws, equilibrium, coordination chemistry, acids and bases, redox chemistry, electrochemistry, kinetics, and nuclear chemistry. Four hours lecture/three hours lab. Offered Winter semester only.

CM 210**Inorganic, Organic, and Biochemistry (4/6)**

Prerequisite: high school chemistry with a grade of "C" 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; 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, 104 or 114 — An introduction to organic chemistry; topics include the classes of organic compounds, reactions, synthesis and mechanisms. Four hours lecture/one and one-half hours lab.

CM 236**Organic Chemistry 1 (4/4)**

Prerequisites: CM103 or CM 113 and CM 104 or CM 114 with a 2.0 GPA or higher Chemistry 236 is the first part of a two semester sequence for those students who require a full year of organic chemistry. In this course, students will be introduced to the fundamental language and roles of organic chemistry, then begin a systematic study of functional groups. Nomenclature, stereochemistry, and how physical properties, chemical structure and chemical reactivity are interrelated will be covered along with an introduction to reaction mechanisms. The use of spectroscopy will be introduced as a means of structure determination. Many transfer institutions also require CM 237, Organic Chemistry Laboratory 1.

CM 237 Organic Chemistry Laboratory 1 (1/4)

Prerequisite or co-requisite: CM 236 or equivalent — Chemistry 237 is the first part of a two-semester sequence for those students who require a full year of organic chemistry lab. In this course, students will be introduced to basic organic laboratory techniques, including extraction, distillation, chromatographic techniques, and synthetic methodologies. The use of spectroscopy will be introduced as a means of structure determination.

CM 238 Organic Chemistry 2 (4/4)

Prerequisites: CM 236 with a 2.0 GPA or better — Chemistry 238 is the second part of a two-semester sequence for those students who require a full year of organic chemistry. In this course, the systematic study of organic functional groups will be continued. Nomenclature, stereochemistry, and how physical properties, chemical reactivity are interrelated continue to be covered with an emphasis on understanding and writing reaction mechanisms. Many transfer institutions also require CM 239, Organic Chemistry Laboratory 2.

CM 239 Organic Chemistry Laboratory 2 (1/4)

Prerequisites: CM 237 with a 2.0 GPA or higher. **Corequisite:** CM 238 — 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 237 Topics will include theoretical and practical aspects of polymer architecture, step and chain growth polymerization, polymer stereochemistry, thermal properties and analysis, and methods of molecular weight determination. Current applications of major commercial and newer polymers will also be examined. 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 282 Instrumental Analysis (4/7)

Prerequisite: CM 212 & MA 110 — This course will cover the principles and applications of analytical instrumentation. Topics include spectroscopy, electroanalytical chemistry, separation methods, and thermal analysis.

CO – COMPUTER APPLICATIONS

CO 101 Introduction to Computer Applications (2/2)

This course is a general understanding and operation of current software applications via personal computers. Projects are completed using word processing, graphics, spreadsheets, database management and electronic presentations. Productive ways that computer systems can be used are also demonstrated. On-line training and assessment are also incorporated in this environment.

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. Students will control windows, manage programs, work with directories, files and folders, use accessories, transfer data between applications, manage printing, perform disk maintenance and customize the desktop environment.

CO 110 Introduction to Computer Information Systems (3/3)

This course covers fundamental computing concepts that are part of the digital age, including software, hardware, data, people, and procedures, security and ethics. The course centers on educating today's technology consumer, using themes of ethics, the Internet, and communications to demonstrate how the changing world of technology influences our lives and the decisions we make.

CO 112 Principles of Information Security (2/2)

Prerequisite: Computer literacy — This lecture course provides a broad review of the field of information security. It includes the history, terminology, and key concepts of the field as well as strategies for managing the security of data and systems.

CO 116 Introduction to Computer Programming (3/3)

Prerequisite: CO 101 or equivalent — 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. This course emphasizes the importance of design and coordinating procedures to accomplish programming objectives. Using a computer programming language, this course readies students for an easy transition to high level languages.

CO 117 Java Programming (3/3)

Prerequisite: CO 116 - Introduction to Programming Logic, or knowledge of another programming language is very helpful Java Programming 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. Lecture/Lab Combination

CO 120**Using Graphics Software (2/2)**

Prerequisite: CO 101 — Students will learn to use computer graphic tools and techniques to produce illustrations and will experiment with design alternatives. Work will be created in both draw and paint layer graphics to communicate visually. Students will learn to create basic to complex designs and then manipulate and edit their designs to study how this affects the variations of their finished products.

CO 122**Computerized Illustration (2/2)**

Prerequisite: CO 120 — Students use a wide range of advanced computer graphics techniques for creating illustrations and analyzing design alternatives. Students will evaluate, model and render two-dimensional designs in black and white as well as color. Projects include advertising layouts, fine art illustrations and technical drawings. Students will use graphic layers to organize and manipulate artwork. Student created patterns, filters and masks are used by students to enhance their illustrations. Students will learn about printing options and also prepare graphics for web publications. Prior graphic design background and using computer graphics tools are beneficial.

CO 124**Visual Basic.NET Programming (3/3)**

Prerequisite: CO 101, CO 105, CO 116 or equivalent experience — Fundamentals of the Visual Basic computer programming language, emphasizing language elements, syntax, and problem solving algorithms. Each assignment includes a user interface with appropriate controls, and event code developed with Visual Basic.NET tools. Assignments follow educational and business themes. Visual Basic is one of the most generally used programming languages, and is widely accepted as the starting language for people interested in learning computer programming. Lab fee.

CO 127**C++ Programming (3/3)**

Prerequisite: CO116 — Fundamentals of 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. CO127 (C++) is the programming course at GRCC that meets the basic requirement for engineering curriculums. 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, design and write object-oriented programs, and become familiar with .NET programming. Topics include C# console structure, flow control, variable declaration, functions, and object oriented concepts.

CO 132**UNIX Operating System (2/2)**

Prerequisites: CO 105 — The UNIX operating system for computer networks is studied. Students learn to use UNIX commands to operate and navigate the network system. Students will learn to apply the UNIX system to tie mixed brands and types of computers together. Basic UNIX commands, the VI editor, and Shell programming are introduced.

CO 140**Microsoft Power Point (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 overheads, interactive slide shows, handouts and speaker notes.

CO 142**UNIX Shell Programming (2/2)**

Prerequisite: CO 132 — Students learn to write UNIX shell programs (scripts). In a hands-on environment students study shell processes, variables and file types, keyword and positional parameters. Flow control and looping constructs, redirection, piping, debugging aids, command line interpretation, and programming efficiency are also covered. A knowledge of shell programming is essential for UNIX Systems Administrators and Applications Developers.

CO 145**Using the Internet (3/3)**

Prerequisite: CO 105 or CO 145 — "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)**

Prerequisites: CO-105 — Fundamental computer literacy, knowledge and moderate comfort level with Internet usage and knowledge of the operating system. HTML knowledge useful but not required. Courses that provide this background are CO 101, CO 105, and CO 145. Students must take these classes or have equivalent experience. Students will learn the basics of web design, development and publishing including how to design and program a web page, how to set up a site and publish it to the internet. In a hands-on environment, students will design web pages using HTML and Macromedia Dreamweaver software, implement simple graphics and be exposed to design technique principals. In addition, students will publish to a web server and analyze web site functionality.

CO 148**HTML Essentials (3/3)**

Prerequisites: CO 145 — HTML Essentials (hyper text markup language) is the study of the rules that define the layout of text within a web page. The course covers the hyper text markups defined in XHTML (extended hyper text markup language), DHTML (dynamic hyper text markup language) and CSS (cascading style sheets). In a hands-on environment, students will design web pages using XHTML, DHTML, CSS and a text editor like Notepad. Students will publish to a web server and learn how to maintain their web site. Markup languages run on all operating systems, Window, UNIX, etc.

CO 150**Introductory****Computer Animation (2/2)****Prerequisite:** CO 120, CO 168 or CO 152

CO 150 will expose the learner to basic necessary skills for 2D animation using Macromedia Director. Macromedia Director is the authoring software of choice for many multimedia and animation professionals. Designed around the metaphor of a movie production, with its scenes, scripts, scores, and casts, Director lets users merge and orchestrate text, graphics, animation, video, sound effects, and music into business presentations, entertainment and education CD-ROMs, interactive information kiosks, Shockwave movies for the Web, and other full-featured interactive productions. Documents created in Director can be memory intensive and require consistent file management.

CO 152**Photoshop (2/2)****Prerequisite:** CO 120 or equivalent

Students use Photoshop, image-editing software used by graphic designers, to create unique images and manipulate objects within a document. This course provides students experience in creating, editing and manipulating bitmap graphics for both print media and web page design.

CO 155**Word (2/2)****Prerequisite** CO 101 or BA 145 or **fundamental computer literacy**

— Students will build on word processing software in a hands-on environment. Integration of Word documents with other Office suite programs will be included.

CO 156**Excel (2/2)****Prerequisite:** CO 101 or BA 145 or **fundamental computer literacy**

— Using the computer to electronically manipulate data in a spreadsheet. Practical examples are shown for work, home and education. Topics include sorting, formulas and functions, charts and graphics, wizards, multiple worksheets, lookup tables, macros and database commands.

CO 162**Introduction to****Desktop Publishing (2/2)****Prerequisite:** CO 101; **Co-requisite:** CO 120

Desktop publishing is the design, layout, and printing of documents combining text and graphics. This course develops skills necessary for electronic page layout on a personal computer. Students will create and modify newsletters, menus, resumes, advertising and identification packages in a hands-on environment.

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 the 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)****Prerequisite** CO 105 — 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 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.

CO 217**Advanced Java Programming (3/3)**

Building on the foundation skills learned in CO 117, introduction to Java Programming, this course uses a live code approach to teach the more advanced features of Java Programming. Java programs are used to develop applications for multiple platforms from cell phones and PDAs to the Internet to enterprise servers. The strengths of an Object Oriented Program (OOP) language are reviewed emphasizing examples and projects that provide students with an opportunity to solve real world problem.

CO 224**Introduction to****Systems Analysis (3/3)**

The role of the systems analyst in a dynamic business related computer environment is defined and the key functions of systems analysis are reviewed. These functions include feasibility studies, system design, screen design and layout, disk and tape record layout, input-output specifications and control procedures.

CO 225**Advanced Visual Basic.NET****Programming (3/3)**

Prerequisite: CO 124 — Advanced Visual Basic.NET Programming Catalog Description A brief description of the course. Students apply and extend knowledge gained in CO124 to create more comprehensive programs with VISUAL BASIC. Using VISUAL BASIC .NET as a platform, students will learn proper techniques and strategies to develop classic desktop applications, distributed applications, web services, and dynamic Web pages. Three hours lecture/lab combination.

CO 227**Advanced C++ Programming (3/3)**

Prerequisite: CO 127 — Advanced C++ programming will develop student's ability to understand and develop Object Oriented Programming (OOP) as it applies to C++. We will start by looking at classes (and objects), pointers, inheritance, and polymorphism. Then we will transition slightly to look at the visual C++, and implement some dialog applications. Some additional topics that we might have time for are: templates and Standard Template Library. This class will emphasize Object Oriented Programming and structured programming.

CO 229**Advanced C# Programming (3/3)**

Prerequisite: CO129 — Introduction to C# Programming or previous C# experience Students will learn advanced coding techniques using C#, a language that is designed specifically for programming Microsoft's .NET Framework. Students will study the features of collections, object-oriented classes, and windows forms. In addition, ADO for database file interaction and ASP for web applications will be studied.

CO 230**Introduction to Telecommunications (2/2)**

Prerequisite: CO 101 — The telecommunication 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 work place.

CO 231**Wide Area Networking (WAN) (2/2)**

Theory Prerequisite: CO 230 — The main goal of this course is to provide you with a comprehensive understanding WAN networking architecture. You will learn the theory behind WANs, including the OSI Model, Packet Switching Networks, Cell Relay Networks, Routers, WAN Protocols, Network Security, and Wireless Technology used in WANs. The course provides a range of homework and discussions that teach you about theory as well as how to design and internetwork WANs.

CO 232**UNIX/LINUX Systems Administration (2/2)**

Prerequisite: CO 132 or equivalent — Students learn how to administer a multi-user UNIX/LINUX 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/LINUX operating system.

CO 233**Local Area Networking (2/2)**

Prerequisite: CO 105 — Computer Local Area Networks (LAN) are thoroughly studied. Students learn the different topologies, terminology and theories that pertain to the field of networks. Operating systems briefly discussed include UNIX and Windows servers. Students will study exam objectives for CompTia's Network+ exam. Hands on experience will be gained by working with networked PCs.

CO 235**Advanced LAN for Windows Server (2/2)**

Prerequisite: CO 233 — Students will learn to administer a Windows network using the latest network operating system. Topics include Windows server installation and configuration, planning server hardware, and working with Active Directory. Students will learn how to manage accounts, groups, files and folders in a Windows server environment. Remote access and VPN technology will be applied to a Windows server.

CO 241**Web Databases (3/3)**

Prerequisites: CO 117, CO 146, CO 171 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 LINUX/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 other current language.

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. Students produce a series of fully rendered 3-D animated models in such areas as information video, marketing, facilities walk throughs and preproduction product evaluation. Using 3-D modeling software, students work with timing effects, creation of 3-D objects from a 2-D plane, materials editing, reflection mapping, and other 3-D animation operations. Prior experience using a graphical tool set to create 2-D animation is useful.

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.

CO 265 Computer Servicing I (2/4)

Beginning preparation for A+ exam. Students learn to connect microcomputers to peripheral devices. Topics include microprocessor architecture, operating systems, memory, floppy drives, hard disk drives, peripherals, parallel and serial input/output devices, microcomputer buses, modems, CD ROMs, printers and monitors. Students devote extensive lab time to configuring 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 II (2/4)

Prerequisite: CO 265 or EL 265, **Continuing preparation for A+ exam** — Students learn to troubleshoot and repair microcomputer systems, including microcomputer software, additional operating systems, basic operation of system components, networks, and printers, troubleshooting techniques and documentation of analysis and repair information. They learn basic operational theories and perform laboratory work including analysis and repair of computers. Completion of EL265 or CO265 is recommended before taking this course. Four hours lecture/lab combination. CO 266 and EL 266 are the same course; therefore, credit cannot be granted for both courses.

COM – COMMUNICATION STUDIES

COM 131 Fundamentals of Public Speaking (3/3)

Students will research, develop, organize and deliver presentations to a classroom audience. Students prepare speech outlines and present 4-6 speeches of varying lengths. Class also includes small and large group discussions and activities. Course counts as credit toward fulfilling Group I (humanities) requirements for the associate's degree.

COM 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.

COM 227 Argumentation and Debate (3/3)

An independent research course in the fundamentals of building arguments. Students will research and write a paper that takes a position on a recent collegiate debate topic. Enrolled students will be contacted by the professor regarding the first meeting which takes place in the first two weeks of class.

COM 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. Recommended for students who have completed COM 227 and wish to apply the principles learned.

COM 232 Intro to Persuasive Speaking (3/3)

Prerequisite: COM 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.

COM 235 Gender and Communication (3/3)

Prerequisite: Successful completion (C or better) of **Interpersonal Communication (COM 135)** — This course emphasizes an awareness of, sensitivity to, and competence in communication between men and women. Theories focus on family, friendship, romantic, educational and workplace relationships. Course requires active participation, reading, research, writing journals and papers, and presentations. Counts as credit toward fulfilling Group I (humanities) requirement for the associate's degree.

COM 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 interaction patterns as represented through the communication of family members.

COM 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.

CP – COMPUTER PROGRAMMING

CP 149 Linux Basic (2/2)

Prerequisite: 2 years of high school algebra or MA 104 or equivalent knowledge — This course offers students an overview of the Linux operating system. Students will learn the fundamental commands of the Linux system, its structural organization and file systems and how to create and manage directories and files. The course also provides an overview of the vi editor, one of the most widely used editors on Linux. Students will interact with the shell, learn the concepts of Linux processes and methods to customize the Linux environment.

CP 151 Introduction to Windows, Programming and Internet (3/3)

This course introduces students to the IBM Advanced Career Education (ACE) program for e-business Application Developers. Concepts of the Windows operating system, Office software and the Internet are introduced. Students will be given examples of programs that they will develop skills to create. Potential jobs that this program prepares students to do will be discussed.

CP 153 Computer Architecture & Operating Systems Concepts (2/2)

An overview of computer systems, the characteristics of processors, digital circuits and the nature of equivalent, combinational and sequential circuits will be provided. The course also covers representation of real numbers in a binary system, the organization of the central processing unit (CPU) and memory, microprogramming, machine language and Input/Output organization. Students will learn about virtual machines and language processors. Operating systems will be dealt with in detail.

CP 163 Programming Fundamentals and Programming with C (4/4)

Prerequisite 2 years of high school algebra or MA 104 or equivalent knowledge
Students will learn the elements of the development process for mainframe applications. The course also covers the components of a mainframe configuration; hexadecimal and binary numbering systems and the standard elements of a host application program. Detailed information about the various elements of C, concepts of computing, algorithms, programming languages and compilers will be covered. The concepts of arrays and how they are used for solving problems will be included. Structures and unions in C will be discussed. Students will learn the concepts of functions, recursion, pointers, file handling, handling command line arguments, the enumeration data type and how to use macros.

CP 165 Data Structures and Algorithms Using C (3/3)

Prerequisite CP 163. Co-requisite MA 107 or equivalent knowledge — Students will be introduced to data structures and algorithms used in computing systems. The course uses the C language to provide an overview of data types and data structures, linked lists, stacks, and queues. Students will learn the role of data structures in solving problems and applications using list data structure, the need for linked lists and implementation of lists as arrays. They will also learn about abstract data type stack and the application of stacks, the implementation of queues as arrays and applications of queues. Graphs as data structures, set representation of graphs and applications of graphs will be studied. The course will cover trees, sorting techniques and searching techniques.

CP 172 Database Management Systems Concepts & SQL (2/2)

Prerequisite is CP153 or equivalent experience. Co-requisite MA 107 or equivalent knowledge — This course is designed to provide first year students and industry professionals an overview of Relational Database Management Systems (RDBMS) and Structured Query Language (SQL). Emphasis is on data tables, aggregate functions, the parent-child relationship, the creation and management of database objects, dictionary, access and security. Hands on activities using IBM's DB2 software will be incorporated. This course is intended for students in the IBM e-Business Application Development program.

CP 174 Core Java (5/5)

Prerequisite: CP 176 — This course introduces students to object oriented programming using Java. Students will learn about Java features, naming conventions, variable declaration and initialization, inheritance, abstract classes and methods, interfaces and commonly used built-in packages of Java. Students will learn about exceptions, object serialization, Abstract Window Toolkit, layout manager, applets, multithreading and networking, socket programming, database connectivity in Java and SQL statements, Java beans. Graphics 2D rendering methods, coordinate systems, shapes, fonts and images will also be covered.

CP 176 Object Oriented Programming With C++ (3/3)

Prerequisite: CP 165 — Students will learn about programming paradigms, polymorphism and the advantages of the object-oriented development system. They will also learn about classes and objects, methods, and messages. The concept of abstract classes, identification of classes, and assigning responsibilities are also covered extensively. Students will learn about member functions, message passing, and dynamic object creation and destruction and become familiar with friend classes, nested classes, static functions, and the concept of inheritance. They will also learn about access restrictions and inheritance, constant data, and member functions. The course will also cover operator overloading, multiple inheritance and Run-Time Type Information (RTTI), templates, static members and variables, and raising and handling exceptions. Students will work with templates and the Standard Template Library (STL), input streams, output streams, and file streams, user-defined classes and data types. The course incorporates several lab sessions where students

CP 178 Software Engineering (2/2)

Prerequisite: CP 176 — This course covers types of software applications, categories of software process models, requirements engineering, data flow oriented analysis, handling real-time systems and deriving a structure chart from DFDs. Students will learn about metrics, risk management, software project scheduling, software quality operations, formal technical reviews, quality assurance systems and the capability maturity model. An overview of the techniques of software testing, verification and validation of software and the testing process will be provided.

CP 179**Networking Essentials (1/1)**

The aim of this course is to introduce the student to computer networking, providing an overview of the components of a network and the different types of data communication networks. The course discusses protocol suites and the concept of internetworking. Students will learn about Internet Protocol (IP), the concept of IP addresses and Internet datagrams, Transmission Control Protocol (TCP), TCP operations and application layer protocols, sockets and remote procedure calls. Students will learn about network devices and become familiarized with the fundamentals of network management. The course also discusses the issues of data management, protection and disaster planning.

CP 206**DB2 Programming and Java (3/3)**

Prerequisite: CP 174 — The course covers DB2 programming, Java Database Connectivity (JDBC), Structured Query Language Java (SQLJ) programming, application packages, triggers and embedded SQL concepts. Students will learn to write applets and applications using SQLJ. Students will learn how to develop SQL Procedural Language (SQL/PL) stored procedures and to debug programs using stored procedure builder. They will also learn about coding stored procedures in Java. Students will learn about User Defined Functions (UDF) programming in Java and about data operations on large objects. Concurrency control, classification of failures, backup methods, different database systems and the distributed transaction model will be covered.

CP 210**Web Programming 1 (2/2)**

This is a four week course in the IBM ACE program and is taught early in the third semester. This course is designed to teach students how to use Hypertext Markup Language (HTML) to design and create fully functioning Web pages. It also reviews JavaScript, Java Objects and how to intercommunicate between JavaScript and Java applets.

CP 214**Web Programming 2 (2/2)**

Prerequisites: CP 210-Web Program 1 OR successful completion of program admissions test — This is a four week course in the IBM ACE program and is offered in the third semester of the degree program. This course offers students an overview of VBScript, CGI (common gateway interface) and ASP (Active Server Pages).

CP 218**e-Business, e-Commerce and Security Foundations (3/3)**

e-business is the transformation of key business processes using Internet technologies to improve and expand the organization. This discusses the underlying technologies, building blocks and products needed to create e-business solutions. Topics include security risks, security components, and related tools and services. This course is a six week class offered in the third semester of the program.

CP 220**Enterprise JAVA I (4/4)**

Prerequisites: CP 174 or successful completion of program admissions test — This course is part of the IBM ACE program and is targeted at students who will be developing and testing server-side applications based on the Java 2 Enterprise Edition (J2EE) component model. Students will learn to build web based J2EE applications with WebSphere Studio Application Developer (WSAD). Students will also learn how to develop JDBC code to access relational databases using data sources. This course introduces JavaBeans and describes how to build JavaBeans to work with application builders. The course is eight weeks in length and is taught in the third semester of the program.

CP 228**Object Oriented Analysis and Design Using UML (1/1)**

Prerequisites: CP174 or CP 176 — This is a six week course offered in the third semester of the IBM ACE program. The primary learning outcome of this course is the use of UML as the standard notation for Object modeling. This course introduces the object-oriented paradigm and presents various modeling techniques through several examples. Finally, the course addresses object-oriented testing methodologies.

CP 240**e-Business Application Developer Project 1 (2/2)**

Prerequisites: CP 206, CP 210, CP 214, CP 220, and CP 228 — This project crystallizes all of the topics discussed in the first three semesters of the e-business Applications Developer degree program and enables the student to translate newly acquired knowledge into practice. The project requires the application of object-oriented analysis and design concepts, database design concepts, and programming using object-oriented languages and web technologies. This is a four week course taught at the end of the third semester as a capstone course.

CP 256**Enterprise Java (3/3)**

Prerequisites: CP220 and CP 206 or pass program admissions test — This course is part of the IBM ACE program and is offered as a six week course in the fourth semester of the program. The course teaches students to develop and test server-side applications based on the Java 2 Enterprise Edition (J2EE) component model. The J2EE applications will be deployed on WebSphere Application Server (WAS). The course gives an introduction to server-side development and discusses in detail the various aspects of EJB development.

CP 258**Enterprise Application Development XML (3/3)**

This is a six week course in the IBM ACE degree program offered in the fourth semester of the program. It offers students an overview of application development using XML (extendible markup language).

CP 275**e-business Application Developer Project 2 (2/2)**

Prerequisites: CP206, CP210, CP214, CP258, CP220, CP 256 or successful completion of program admissions test — This is the final course in the IBM ACE degree program, four weeks in length, taught at the end of the fourth semester. This project has students in teams of 3 or 4 people develop a solution to a real-world problem. Students will need to define the problem and come up with a solution utilizing the skills they have learned in DB2 UDB Programming and Stored Procedures, Web Programming I, Web Programming II, Enterprise Application Development Using XML, and Enterprise Java I/II.

COOPERATIVE EDUCATION
(See Business, Computer Applications, Criminal Justice, Culinary Arts, Fashion Merchandising, Interiors and Furnishings, Technology)

DANCE
(See Theatre)

DA – DENTAL ASSISTING

DA 105
Nutrition and Oral Disease Prevention (2/2)
Department Consent Required
Corequisite: 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.

DA 112
Science for the Dental Assistant (2/2)
Department Consent Required
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.

DA 116
Assisting in General Dentistry (6/10)
Prerequisites: DA 112, DX 114, DA 105, DX 104, PE 156 or Current in CPR — The theory and application of the principles of four-handed chairside dental assisting in general dentistry.

DA 118
Dental Biomaterials (2/3)
Department Consent Required
Prerequisite: DX 104 Corequisite: 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.

DA 120
Dental and Oral Anatomy, Histology and Embryology for Dental Assisting (2/2)
Department Consent Required
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.

DA 126
Assist in Dental Specialties (4/6)
Department Consent Required
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.

DA 128
Principles of Dental Assisting 2 (5/7.5)
Department Consent Required
Prerequisites: DA 116, DA 118 — A continuation of Principles of Dental Assisting 1, including oral health management programs and RDA Expanded Functions. Offered Winter semester.

DA 129
Applied Principles of Dental Assisting (2/3)
Department Consent Required
Prerequisite: DA 128 — A clinical practice course designed to give the student clinical experience as a dental assistant. This will take place in a private dental office. Offered Winter semester.

DA 130
Applied Principles of Dental Assisting Seminar (1/1)
Department Consent Required
Prerequisite: DA 128; Co-requisite: DA 126
A seminar course designed to allow the student to share private practice experiences with peers and the instructor. Offered Winter semester.

DA 139
Management of the Dental Office (3/3)
Department Consent Required: 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.

DA 160
Oral Pathology for Dental Assisting (1/1)
Department Consent Required
Prerequisites: DA 120, 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.

DA 208
Dental Assisting Clinical Practice (8/8)
Department Consent Required
Prerequisites: DA 126, DA 128, 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.

DA 209
Dental Assisting Clinical Practice Seminar (1/1)
Department Consent required
Prerequisite: DA 126, 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.

DH – DENTAL HYGIENE

DH 113
Dental Head and Neck Anatomy, Embryology, and Histology (5/6)
Department Consent Required 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.

DH 117**Applied Oral Disease Prevention and Preventive Therapies (3/3)****Department Consent Required**

Prerequisites: DX 104, DX 115, DH 113, DH 119, 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.

DH 119**Pre-Clinical 1 (6/10)****Department Consent Required****Co-requisites:** DH 113, DX 104, 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.

DH 120**Nutrition for the Dental Hygienist (3/3)**

Department Consent Required — 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.

DH 129**Pre-Clinical 2 (6/10)****Department Consent Required**

Prerequisites: DX 104, DX 115, DH 113, DH 119; **Co-requisites:** DH 117, 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.

DH 182**Applied Dental Biomaterials (2/3)****Department Consent Required**

Co-requisite: DH 209 — Uses of dental materials including properties, manipulation, utilization, and applications in dental and dental hygiene procedures. Offered Summer semester.

DH 192**General and Oral Pathology for Dental Hygiene (3/3)****Department Consent Required**

Prerequisite: DH 113, DH 119; **Co-requisite:** DX 126, 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.

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)****Department Consent Required**

Prerequisite: DH 209; **Co-requisites:** DH 219, 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.

DH 209**Clinical Dental Hygiene I (3/6)****Department Consent Required**

Prerequisites: DH 117, DH 129, DH 192, DX 126 — Introductory course to the clinical/treatment of dental hygiene clients. Emphasis is on building fundamental dental hygiene skills. Offered Summer semester.

DH 214**Community Dental Health 1 (2/2)****Department Consent Required****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.

DH 217**Client Care and Management 1 (2/2)****Department Consent Required****Prerequisite:** DH 129; **Co-requisite:**

DH 182, 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.

DH 219**Clinical Dental Hygiene 2 (6/12)****Department Consent Required****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.

DH 224**Community Dental Health 2 (1/1)****Department Consent Required****Prerequisite:** DH 214; **Co-requisite:** DH 237,

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.

DH 227**Client Care and Management 2 (4/5)****Department Consent Required****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.

DH 229**Clinical Dental Hygiene 3 (6/12)****Department Consent Required**

Prerequisite: DH 219 **Corequisite:** DH 224, DH 237, DH 275, 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.

DH 234**Periodontology I (1/1)****Department Consent Required**

Prerequisites: DH 129, DX 126; **Co-requisites:** DH 209 — Fundamental principles of periodontology; etiology, histopathology, inflammatory process, gingival and periodontal diseases, assessment, and introduction to diagnosis. Offered Summer semester.

DH 235**Periodontology II (2/2)****Department Consent Required**

Prerequisite: DH 234; **Co-requisites:** DH 219, 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.

DH 237**Client Care Management 3 (3/4)****Department Consent Required**

Prerequisite: DH 227; **Co-requisite:** DH 229
Continuation of the principles of dental hygiene care for special population groups. Offered Winter semester.

DH 266**Pharmacology for Dental Hygiene (2/2)****Department Consent Required**

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.

DH 275**Dental Ethics and Jurisprudence (1/1)****Department Consent Required**

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.

DH 276**Dental Hygiene****Professional Seminar (1/1)****Department Consent Required**

Co-requisites: DH 224, DH 229, DH 237, 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.

DR – DRAFTING**DR 140****Introduction to Inventor (3/4)**

Students learn to use a parametric aided design to generate: 3D models, assemblies, and 2D layouts

DR 140A**Introduction to Inventor Module A (1/1.33)**

Students learn to use a parametric aided design to generate: 3D models using Autodesk Inventor software.

DR 140B**Introduction to Inventor Module B (1/1.33)**

A continuation of DR 140 A. Students learn to use a parametric constraints, using geometric construction tools and parent/child relationships to build 3D models. Basic 2D drawing setup is also covered. Autodesk Inventor software is used.

DR 140C**Introduction to Inventor Module C (1/1.34)**

A continuation of DR 140 B. Students learn to add angled and offset work planes, revolved features, mirroring, patterning as well as thin walled parts and assemblies. Autodesk Inventor software is used.

DR 150**Introduction to Solidworks (3/4)**

Students learn to use a parametric computer aided design system to generate: 3D parts, assemblies, and detail drawings. Solidworks software is used. Four hours lecture/lab. Offered Fall, Winter, and Summer semesters.

DR 150A**Introduction to SolidWorks Module A (1/1.33)**

Students learn to use a parametric computer aided design system to generate 3D models. SolidWorks software is used.

DR 150B**Introduction to Parametric Design Module B (1/1.33)**

A continuation of DR 150 A. Students learn to use a parametric computer aided design system to generate 3D models and related 2D drawings. Solidworks software is used.

DR 150C**Introduction to SolidWorks Module C (1/1.34)**

A continuation of DR 150 B. Students learn to use a parametric computer aided design system to generate 3D assemblies and related 2 D drawings. Solidworks software is used.

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)**

Designing of jigs, fixtures, and gages. Specification of standard parts, raw materials, fabricated details, and critical dimensions are included in this course. EG 110 or equivalent is recommended before taking this course.

DR 224**Die Design (2/4)**

Designing of basic sheet metal stamping dies. Specification of standard parts, materials, stock lists, dimensions, blanking pressures, and clearances. Stamping presses and processes are also explained. EG 110 or equivalent blueprint skills are recommended for this course.

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 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 288 — 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 — An advanced drafting course that involves industrial drafting practices relative to standards, design layout, dimensioning, tolerancing, detailing and checking. Working drawings and engineering change order procedures are included in the course drawings.

DR 241**Mold Design Theory (3/4)**

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 molds. Students will design several kinds of injection molds. Four hours lecture/laboratory combination.

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)**

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. Offered Fall and Winter semesters.

DR 265**Introduction to Designing with Surfaces (3/4)**

Prerequisite: DR 258, 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)**

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

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)
Department Consent Required**

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.

EC – ECONOMICS**EC 251****Principles of Economics 1 (3/3)**

Principles of Economics I is an introduction to the principles of macroeconomics. The basic concepts of scarcity and opportunity cost are introduced. The focus moves from National Income Accounting to the causes of Macrofailure of unemployment and inflation and the national goals of Full-employment, Price Stability and Economic Growth. Classical, Keynesian, Monetary and Supply-Side Theories are introduced, analyzed and compared.

EC 252**Principles of Economics 2 (3/3)**

Principles of Economics II is an introduction to the principles of microeconomics. The basic concepts of scarcity and opportunity cost are introduced. Consumer & Producer behavior are analyzed and then related to various types of markets from Perfectly Competitive to Monopolistic. Specific examples of market failure are examined including Environmental Protection, the Farm Problem and the Distribution and Redistribution of Income. Current economic problems are examined including: Social Security, Income Taxes and Government Regulation.

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, the practical realities of day-to-day teaching, and the sociological peripheries that hover just outside the classroom door. Topics include but are not limited to: the history and philosophy of education, learning theories, the instructional cycle, state requirements for teacher certification, as well as current issues and trends. At all junctures in the course, students will be challenged to extend classroom discussion through additional readings, collaborative projects, and written reflections.

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 121**Descriptive Geometry (2/4)**

Prerequisite: EG-110 — Students use AutoCAD to solve basic geometric problems of engineering, including visibility, primary and successive auxiliary, true length, point views, true angle, true size, points on lines and planes, piercing points. Intersections of lines and planes, dihedral angle between planes, angle between a line and plane, and coplanar and non-coplanar vector.

EG 201**Advanced Engineering Graphics (2/4)**

Prerequisites: EG 110 or DR 228 and EG 120 — Advanced engineering drafting using autocad or solidworks computer generated graphics to include terminology, techniques and applications. Includes detail and assembly weldments, working drawings, sheet metal developments, piping, geometric tolerancing, and cams.

EG 208**Statics (3/3)**

Prerequisites: MA 134, 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)**

Pre-requisites: Take concurrently with EG212 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.

EL – ELECTRICITY AND ELECTRONICS**EL 101****Basic Electrical Skills (2/3)**

Students acquire the basic knowledge used by an electrician including basic electricity, math, National Electrical Code, use of hand tools, electrical materials, wiring techniques, estimating, 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)**

Basic course in electricity for electronics majors; fundamentals of direct and alternating current circuits; use of Ohm's law, Kirchoff's law and network theorems; theory and operation of resistors, inductors and capacitors in series and parallel circuits and use of testing equipment. Eight hours lecture/lab combination.

EL 107**Technical Electronics (4/8)**

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. Completion of EL 106 is recommended before taking this course. Eight hour lecture/ lab combination.

EL 108**Electronics Servicing (2/4)**

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 procedures followed in troubleshooting audio and radio equipment. Completion of EL 202 is recommended before taking this course. Four hours lecture/lab combination.

EL 132**Electronics Mathematics (5/5)**

A study of mathematics and its applications to electronics; includes scientific notation, algebraic expressions, fractions, equations, exponents, logarithms, determinants, trigonometric functions and number systems.

EL 144**Basic Electricity and Electronics (3/6)**

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 in electricity, its terms and function of direct current circuits and power sources.

EL 144B**Basic Electricity and Electronics Module B (1/2)**

Prerequisites: EL 144A — A continuation of Basic Electricity and Electronics Module A. Includes magnetism and magnetic devices, as well as AC circuit considerations.

EL 144C**Basic Electricity and Electronics Module C (1/2)**

Prerequisites: EL 144B — A continuation of Basic Electricity Electronics. This course covers basic semiconductor theory and their application in fundamental mini systems.

EL 160**Electronic Fabrication (2/3)**

Students acquire the basic knowledge and skills used in the fabrication of electronics products. These include making the drawings necessary for the design, layout and fabrication of electronic products. These include fabricating the sheet metal enclosure, the printed circuit board, the final assembly and testing procedures. Three hours lecture/lab combination.

EL 161**Introduction to Digital Logic (2/4)**

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 hour 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)**

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/lab combination.

EL 166**Advanced PLC Systems (2/3)**

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. Completion of EL 164 is recommended before taking this course. Three hours lecture/lab combination.

EL 201**Industrial Electricity (3/6)**

Application of electricity to industry; principles of DC and AC generators, three-phase circuits, motors, starters, controllers, transformers, and electromagnetic devices. Completion of EL 106 or equivalent is recommended before taking this course. Six hours lecture/laboratory combination.

EL 201A**Industrial Electricity
Module A (1/2)**

Course covers electromagnetic induction, dynamo construction, DC generators and motors, and efficiency and control of DC dynamos.

EL 201B**Industrial Electricity
Module B (1/2)**

Prerequisites: EL201A — Course covers AC dynamos, poly-phase alternators, and single and poly-phase transformers.

EL 201C**Industrial Electricity
Module C (1/2)**

Prerequisites: EL201B — Course covers single and 3 phase AC motor operation and control as well as special devices.

EL 202**Communication Electronics (3/6)**

Theory and operation of voltage and current controlled devices in the transmission and reception of radio frequency signals, oscillators, radio frequency amplifiers, modulators, antennas, and television circuits. Introduction to microwaves, radar, fiber optics and navigational systems. Completion of EL 107 is recommended before taking this course. Six hours lecture/lab combination.

EL 203**Applied Measurements (3/6)**

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. Completion of EL 107 is recommended before taking this course. Six hours lecture/laboratory combination.

EL 204**Industrial Electronics (3/6)**

Electronics as applied to industry, to include rectifiers, thyratons, SCR's, control circuits, photocells, electronic heaters, welding, magnetic amplifiers, ultrasonics and industrial computers. Completion of EL107 is recommended before taking this course. Six hours lecture/laboratory combination.

EL 205**Advanced Electronics (3/6)**

A study of semiconductors and their application to modern circuits; semiconductor physics, diodes, transistors, amplifiers, oscillators and design applications. Completion of EL107 is recommended before taking this course. Six hours lecture/laboratory combination.

EL 261**Microcomputer
Programming (2/4)**

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**Digital Logic Circuits (2/4)**

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)**

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)**

A survey of operational amplifiers, integrated circuit regulators, and integrated circuit timers. Operational amplifier characteristics are emphasized. Circuits included are detectors, amplifiers, signal generators, and active filters. Four hours lecture/lab combination.

EL 265**Computer Servicing I (2/4)**

Beginning preparation for A+ exam. Students learn to connect microcomputers to peripheral devices. Topics include microprocessor architecture, operating systems, memory, floppy drives, hard disk drives, peripherals, parallel and serial input/output devices, microcomputer buses, modems, CD ROMs, printers and monitors. Students devote extensive lab time to configuring 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 II (2/4)**

Prerequisite: CO 265 or EL 265, **Continuing preparation for A+ exam** — Students learn to troubleshoot and repair microcomputer systems, including microcomputer software, additional operating systems, basic operation of system components, networks, and printers, troubleshooting techniques and documentation of analysis and repair information. They learn basic operational theories and perform laboratory work including analysis and repair of computers. Completion of EL265 or CO265 is recommended before taking this course. Four hours lecture/lab combination. CO 266 and EL 266 are the same course; therefore, credit cannot be granted for both courses.

EN – ENGLISH

All English courses include materials by and about minorities. Credit will not be granted for both EN 100 and EN 101.

EN 97**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: Final grade of "C" or better in EN 100/101 or its 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.

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: BA 101 and BA 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 analyses 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 251**Multicultural American Literature for Children (3/3)**

Students will develop an understanding of and a heightened sensitivity to people in the United States from African American, Native American, Latino, Asian, Jewish, and Middle Eastern cultures by studying children's literature of these cultures. The course begins with the oral tradition and covers poetry, fiction, and nonfiction from the past up to present contemporary literature. Students will devise criteria for evaluating and selecting children's literature which reflect our multicultural heritage.

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)****Prerequisite English 101/102 sequence**

This course examines writings by Native Americans (1500's-1800's), colonial settlers (1600's-1700's), revolutionary founders (1700's), African Americans (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, from colonial times to 1900, focusing on the genres of slave narrative, fiction, poetry, 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 of the 18th and 19th centuries.

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 278**Introduction to Women's Literature (3/3)**

EN 278 is an introduction to literature by women writers in which students may study various genres, historical time periods, classes, races, and nationalities. The course explores the variety of writing styles women have used to think about issues such as the search for identity, power, societal roles, relationships and conflict, marriage, sexuality, treatment as the other, responses to patriarchy, achievement, and daily life. The instructor will help students think about the impact of gender on literature, expression, and experience. EN 278 is open to all students who have successfully completed EN 101 or its equivalent

EN 281**Survey of British Literature 1 (3/3)**

Prerequisite En 101/102 sequence strongly recommended — 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)**

Prerequisite En 101/102 sequence strongly recommended — This course surveys the works of 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.

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, also recharge. The student will also perform basic refrigeration-grade tubing connections including soft solder, phos-copper brazing alloy, silver solder, and flaring. There is a tool purchase requirement for this introductory HVACR course. Four hours lecture/lab

ER 111**Refrigeration Applications (2/4)****Prerequisites: ER110 Basic Refrigeration**

Students study in detail refrigeration system components and their operation. Emphasis is 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 complete system. Four hours lecture/lab.

ER 121**Metallic and Non-Metallic Joining (2/4)**

Students learn the basic joining and fabrication methods for sheet metal, fiberglass, copper, plastic, and steel; typically used in the HVACR industry for air duct and piping systems. These methods include spot welding, riveting, screws, S-cleat, drive-cleat, Pittsburgh lock, button lock, gluing, soldering, brazing, and various fittings. The course will include a lab practice in fabrication and assembly of projects including various seam types. Four hour lecture/lab.

ER 128**Heating and Cooling Controls (3/6)**

A study of basic controls used in conjunction with heating and cooling systems. The course will include gas and oil heating controls and conventional air conditioning controls and troubleshooting. Six hours Lecture / Lab.

ER 135**Heating Theory (2/4)**

Students learn the theory of heating system operation and control of building indoor air quality. Principles of combustion of natural gas, LP gas, and fuel oil as well as thermal efficiency and combustion 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 for split systems, packaged systems and heat pump systems. System installation, startup, controls, maintenance, troubleshooting & standard repair procedures are emphasized. Psychometric analysis of system operation & building controls is also studied. Safety 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 print. An emphasis is placed on heating, ventilation, air conditioning and refrigeration systems. The students will read existing prints, estimate materials, and draw mechanical systems onto building prints. Completion of EL135 and EL136 is recommended before taking this course. 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 get classroom instruction in register location, designing duct system, and sizing ducts for correct airflow. The students will design systems for heat only, heating & cooling, and heat pump systems. In the lab the student will practice fabricating an assortment of standard fittings used in air distribution systems. Completion of EL121 is recommended before taking this course. Six hours lecture/lab.

ER 230**HVACR Electronic Controls (3/4)**

Prerequisites: EL 144, ER 128, ER 135 & ER 136 or equivalent experience & training — 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 delay relays, and programmable controllers will be emphasized. Four hours lecture/lab.

ER 246**Mechanical Codes (2/2)**

The Michigan Mechanical Code: heating systems, ventilating systems, steam and hydronic systems, boilers and pressure vessels, appliances using gas, liquids and solid fuel, chimney and vents, and mechanical refrigeration. Students review the current edition of the Michigan Mechanical Code book and apply “the code” to practical examples. Completion of ER 135 and ER 136 is recommended before taking this course. Two hours lecture.

ER 250**Basic Boiler Operation (3/4)**

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. Completion of ER135 is recommended before taking this course. Four hours lecture/lab.

ER 275**Commercial Refrigeration (3/4)**

Prerequisites: ER 110 and ER 111 or equivalent training and experience Operating systems and components used in commercial refrigeration systems; 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 Htg. (3/4)**

Prerequisites: ER 135 and ER 136 — Use of psychrometric charts to aid calculation of heat gain of 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 economizer systems. Four hours lecture/lab combination

ES – ENGLISH AS A SECOND LANGUAGE**ES 101****English as a Second Language: Listening and Speaking 1 (4/4)****Department Consent Required**

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)****Department Consent Required**

Prerequisite: “C” or better in ES 101 or placement by exam — 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)****Department Consent Required**

Prerequisite: “C” or better in ES 102 or placement by exam — 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 also 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)****Department Consent Required**

Prerequisite: “C” or better in ES 103 or placement by exam — This is an advanced course designed to prepare English as a Second Language 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)****Department Consent Required**

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)****Department Consent Required**

Prerequisite: Prerequisite “C” or better in ES 111 or placement by exam — 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)****Department Consent Required**

Prerequisite: Prerequisite “C” or better in ES 112 or placement by exam — 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)****Department Consent Required**

Prerequisite: “C” or better in ES 113 or placement by exam — 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)****Department Consent Required**

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)****Department Consent Required**

Prerequisite: “C” or better in ES 121 or placement by exam — 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)****Department Consent Required**

Prerequisite: “C” or better in ES 122 or placement by exam — 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)****Department Consent Required**

Prerequisite: “C” or better in ES 123 or placement by exam — 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 skills and vocabulary needed to understand English texts at the college level.

**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 cosmetics. Principles of line design and color are emphasized. Four hours lecture/laboratory combination.

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.

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 Fashion Merchandising I (3/3)

Prerequisite: Department Consent required
Students participate in a cooperative program of work and learning involving area employers. They work a minimum of 15-20 hours a week, under supervision at approved employment, and their performance is monitored by the instructor. 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)

FM 181 Cooperative Education in Fashion Merchandising 2 (3/3)

Prerequisite: Department Consent required
Students participate in a cooperative program of work and learning involving area employers. They work a minimum of 15 hours a week, under supervision at approved employment, and their performance is monitored by the instructor. In addition, attendance in the classroom is required one-hour a week, or equivalent. (Students must have the written permission of the appropriate cooperative education coordinator)

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. 3 hours lecture, 1 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)

Prerequisite: Department Consent required
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)

Department Consent required
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 based on detailed observations.

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 compositional 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.

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 US 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 & 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.

GH – GENERAL HEALTH**GH 107****Introduction to Health Care Careers (3/3)**

This course is designed to introduce the student to career options available in health and to assist the student in appropriate selection of a career in the health care field. Career exploration will include an overview of health care in the past, present and future, legal-ethical considerations, discussion of essential skills, roles, and employment opportunities among a variety of health professions.

GH 110**Medical Terminology 1 (2/2)**

Study of medical terms and meanings for students desiring to be medical secretaries or radiologic technologists. 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)**

An introductory course for health students on how to establish and maintain therapeutic relationships. The student will demonstrate the skills of rapport building, active listening, communication styles, interviewing techniques, and group processing skills. The student will describe professionalism as it applies to health care in areas of ethics, confidentiality, and patient advocacy.

GH 125**Intro to the Structure & 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 also included.

GH 126**Microbiology for Health Care (1/1)**

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.

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. Some of the activities in both lecture and lab will be group activities. 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 111**Earth Science for Education (4/6)**

This course is designed to prepare elementary education majors to teach the earth science subjects included in the Michigan Curriculum framework. Topics to be covered are plate tectonics, the rock cycle and minerals, the water cycle, weather, and the solar system.

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 will 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 will 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 will not receive credit for both.

GO 282**Gerontology Practicum I (4/4)**

Prerequisite: Recommended that Gerontology Core Requirements of GO 203, GO/SO 261, and GO/SO 262 be taken before or concurrently — This course combines classroom training with beginning field experiences (10 hours per week) in a community-based human services agency. Emphasis is on knowledge of the community power structure, funding bases, and the internal working of human services organizations. Opportunities in the labor force, certification requirements, and networking are explored.

GO 283**Gerontology Practicum II (4/4)**

Prerequisite: Recommended that Gerontology Core Requirements of GO 203, GO/SO 261, and GO/SO 262 be taken before or concurrently, and requires successful completion — This course provides classroom training on principles of human services delivery with advanced practical experience (10 hours per week) in a community-based human services agency. Emphasis is on identifying systems and resources to link the systems with the people and how to mobilize the systems and the people.

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.

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 120**World History to 1500 (3/3)**

To provide basic content and methods of history through an introductory study of world cultures before 1500. The course will have a special focus on Non-Western societies including Africa, Asia, Latin America, and the Middle East. This course will analyze and compare the ways in which political, economic, social, cultural, environmental and demographic factors influenced the development of world societies. The course will examine the ways in which these societies interacted with one another and with the Western World. Themes of study will include: migration, war, empire, technological development, and religious and cultural diffusion.

HS 121**World History Since 1500 (3/3)**

To provide basic content and methods of history through an introductory study of world cultures since 1500. The course will have a special focus on Non-Western societies including Africa, Asia, Latin America, and the Middle East. This course will analyze and compare the ways in which political, economic, social, cultural, environmental, and demographic factors influenced the development of world societies. The course will examine the ways in which these societies interacted with one another and with the Western World. Themes of study will include: migration, war, empire, technological development, and religious and cultural diffusion.

HS 239**The History of Ulster (3/3)**

A general survey of the history of Ulster, emphasizing political, economic, and social developments contributing to religious, intellectual and cultural diversity which has characterized this northern area of Ireland from pre-history to the present. This course is offered as an integral component of the Irish Foreign Studies Program and is only offered in conjunction with the travel program in Ireland.

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 55 BC to 1783 (3/3)**

Survey of English history. HS 241 begins with prehistory and ends with the Restoration. Political, economic, social, intellectual and cultural themes will be 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**U.S. History 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 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 251**African-American History and Culture (3/3)**

This course is designed to introduce students to the major themes and issues in African-American History from pre-contact through the modern era. Special attention will be paid to the centrality of the African-American experience in American history. Students will engage in robust study of both cultural and historical evidence to demonstrate the agency of the common man and woman. Special attention will be paid to issues such as slavery, the creation of modern racism, civil rights, and segregation.

HS 260**History of Michigan (3/3)**

History of Michigan from pre-historic Native American times to the present. The era of the French, the British, Michigan as a territory, early statehood, the lumbering and mining eras, industrial age and the state after World War II will also be emphasized.

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 & 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.

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.

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, 137

PL (Any courses)

PO 105

COM 131, 135, 241

TH 240, 248, 249

HU 204**Humanities and the Human Adventure I (4/4)**

Corequisite: 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 204 & HU 205 not needed to be taken sequentially)

HU 205**Humanities and the Human Adventure II (4/4)**

Corequisite: 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 204 & HU 205 not needed to be taken sequentially)

HU 210**The Art of Being Human (3/3)**

Corequisite: 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 will be 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)**

Corequisite: 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 245**Technology and Humanity (3/3)**

This course will examine definitions of technology, while identifying some of history's most influential inventions. Through a discussion of universal human values as identified by some of the world's greatest writers and thinkers, learners will reflect on positive and negative impacts of technology on humanity while analyzing and evaluating their own interactions with technology.

HU 273**Film Viewing and Construction—An Introduction to Film (3/3)**

Prerequisite: EN 100/101 or sophomore standing or instructor approval. HU 204, HU 205, or HU 210 may be helpful — This course is an introduction to the study of film and its stylistic tendencies, narrative strategies, genres, and theoretical approaches. Students will view, discuss, and critique representative films from the silent era, early comedy, the New Cinema, current films, the foreign film and the documentary.

HU 274**American Cinema Genres (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)**

Corequisite: EN 100 or EN 101 or instructor approval — Students will survey (through substantial immersion into world religion texts) 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.

IF – INTERIORS AND FURNISHINGS**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**Coop Education in Interiors and Furnishings I (3/3)**

Department Consent required — Students participate in a cooperative program of work and learning involving area employers. They work a minimum of 15 hours a week, under supervision at approved employment, and their performance is monitored by the instructor. In addition, attendance in the classroom is required one-hour a week, or equivalent. (Students must have the written permission of the appropriate cooperative education coordinator)

IF 181**Coop Education in Interiors and Furnishings II (3/3)**

Department Consent Required — 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)**

Department Consent Required — 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, textile and accessory showrooms, visit a New York design studio and a museum, and complete a comparative merchandising analysis based on detailed observations.

IF 290

**Interiors Exploration:
Chicago (1/1)**

Department Consent Required — 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 observation.

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, page design, and production. This course requires students to work on the student newspaper, in the student newspaper office on campus. This work requires several hours per week outside of class.

JR 252

Advanced Journalism (3/3)

Prerequisite: JR 251 — An advanced course in newspaper writing, based up on 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/SC-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 production 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

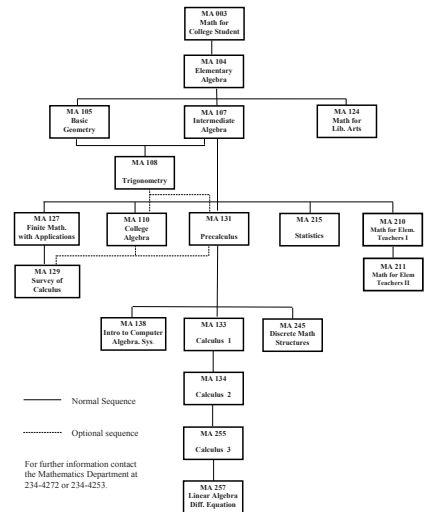
Reporting (3/3)

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.

MA – MATHEMATICS

Read This!

**Flowchart of Mathematics Courses
Do you have the prerequisites?**



MA 3

Mathematics for College Students (4/4)

Math 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, 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 1st 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.

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 I) 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 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.

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 curricula requiring a mathematics major. Students in such a curriculum should elect MA 133, 134, 255, and 257.

MA 131**Precalculus (5/5)**

Prerequisite: Grade of C or better in 3 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. Applications will be introduced throughout the course. Graphing calculators will be utilized to enhance understanding and gain insight through explorations.

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.

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.

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 preservice 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 systems.

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 preservice 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.

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: multi-variable 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.

MA 257**Differential Equations and Linear Algebra (4/4)**

Prerequisite: MA 131 and MA 133 and MA 134 and MA 138 and MA 255, or their equivalent. Introduction to differential equations and linear algebra. Topics in differential equations include: linear, separable, homogeneous and exact equations, systems of differential equations, solutions by series, numerical methods, and the Laplace transform. Linear algebra topics include: systems of linear equations, matrices, determinants, and vector spaces. Applications are incorporated when appropriate.

MN – MANUFACTURING**MN 100****Manufacturing Principles (2/2)**

This course is a study of manufacturing principles, which include, but 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 108**Technical Skills****Enhancement (2/2)**

Prepare students for satisfactory completion of the intensive timed test required to enter the apprentice program. Many areas of math (including basic algebra and geometry), blueprint reading, mechanical concepts, spatial skill development and reading comprehension. It is to the student’s advantage to work diligently both inside and outside of the classroom to be more fully prepared for the Apprentice exam.

MN 113**Mechanical Power
Transmission (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 source for driving power. This course discusses bearings, chain drives, belts, conveyors, couplers, controls, gears, speed reducers, and lubrication.

MN 114**Machine Trades (2/2.25)****Prerequisite:** TE 103, EG 120 or equivalent

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.

MN 114A**Machine Trades****Blueprint Reading 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.

MN 114B**Machine Trades****Blueprint Reading B (1/1.12)**

Prerequisite: MN 114A — Students interpret engineering working drawing measurements and dimensioning as well as interpret engineering drawing notes.

MN 116**Basic Welding (2/4)**

To acquaint the student with the fundamentals of oxyacetylene, electric arc, and inert gas welding. Provide the student with basic skills in gas and arc welding, the standards for safe welding practices and the ability to determine sound welding design.

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)**

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)**

Prerequisite TE 103 or TE 104 — This class covers operation of basic metal-removing machinery including the power saw, drill press, lathe, mill, and griner. Also included is shop safety, precision measurement, and an introduction to CNC and EDM machining.

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)**

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)**

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)**

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**Basic Oxyacetylene Welding (3/4)**

To acquaint the student with the fundamentals of oxyacetylene welding cutting and brazing. Provide the student with basic skills in oxy-fuel operations and the standards for safe welding practices.

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)**

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)**

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 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 all position work to the American Welding Society code. Eight hours lecture/lab.

MN 136A **Basic Arc Welding** **Module A (2/4)**

A study of the theory of Shielded Metal Arc Welding (SMAW). 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)**

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 160 **National Electric Code (3/3)**

Prerequisite: TE 103 or Equivalent — 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.

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 199 **Theory of Machine Shop (3/4)**

Prerequisite: TE103 or TE104 or equivalent — This class covers the theory of basic metal-removing machine operations including the power saw, drill press, lathe, mill, and grinder. Also included is shop safety, precision measurement, and an introduction to CNC EDM machining.

MN 200 **Intermediate** **Machine Operations (4/8)**

Prerequisite: MN 119 or MN 199 — 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 programing 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 213
Machinery's 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.

MN 213A **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.

MN 213B **Machinery's Handbook** **Module B (1/1)**

Prerequisite: TE 103 and TE 104 and TE 213A — Trains the industrial worker to use the handbook to solve problems involving square roots, circles, formulas, tapers, threads, oils, coolants and steel fabrication.

MN 214 **Advanced Machine (2/2.25)** **Trades Blueprint Reading**

Prerequisites: MN 114 or equivalent — An advanced course in the study and interpolation of complicated machine and tool prints of the machine trades.

MN 214A **Advanced Machine Trades Blue-** **print Reading - Module A (1/1.25)**

Prerequisites: MN 114 or Equivalent — An advanced course in the study of technical sketching, dimensioning, and drawings in the machine trades.

MN 214B **Advanced Machine Trades Blue-** **print Reading - Module B (1/1)**

Prerequisites: MN 114 and MN 114A or Equivalent — An advanced course in drawing construction, management, parts, prints, and layouts.

MN 215**Industrial Physics (2/2.25)****Prerequisites:** TE103, 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.

MN 217**Hydraulics (4/6)**

Fundamentals of moving fluid and hydraulic power, design of hydraulic pumps, operation of Hydraulic valves, selection of cylinders, motors, accumulators, and the design of hydraulic circuits. This class involves six hours of lecture/lab combination.

MN 217A**Hydraulics Module A (1.33/2)**

Introduction to the fundamentals of hydraulics. Students will study the principles of pressure, force, and flow as they apply to basic hydraulic systems.

MN 217B**Hydraulics Module B (1.33/2)**

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 (1.34/2)**

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 the 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 (4/6)**

Basic types of plastic materials, methods of forming plastic parts, machinery used, plastic tooling, fastening, welding, decorating, mold design, evaluation and selection of plastic material, and laboratory experience in forming plastic. 6 hours lecture/laboratory combination.

MN 223**Injection Molding Theory (3/3)**

Prerequisite MN 220 — 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 230**Fundamentals of TIG and MIG Welding (4/8)**

Emphasizes proper assembly of the equipment used in GMAW and GTAW welding and includes safe operation, proper welding procedures and techniques used in welding steel, aluminum, and stainless steel. This is an advanced course as all students performances will be held to the American Welding Society standards of performance in the welding of coupons and testing.

MN 230A**Tig Welding Steel 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. All student performances will be held to the American Welding Society standards of performance in the welding of coupons and testing

MN 230B**Tig Welding Aluminum Module B (1/2)**

Emphasizes proper assembly of the equipment used in GMAW and GTAW welding and includes safe operation, proper welding procedures and techniques used in welding steel, aluminum, and stainless steel. Student performances will be held to the American Welding Society standards of performance in the welding of coupons and testing.

MN 230C**Mig Welding Module C (1/2)**

Emphasizes proper assembly of the equipment used in GMAW welding and includes safe operation, proper welding procedures and techniques used in welding steel. Student performances will be held to the American Welding Society standards of performance in the welding of coupons and testing.

MN 230D**Flux Cored Arc Welding Module D (1/2)**

Emphasizes proper assembly of the equipment used in GMAW and FCAW welding and includes safe operation, proper welding procedures and techniques used in welding steel and aluminum. Student performances will be held to the American Welding Society standards of performance in the welding of coupons and testing.

MN 231**Welding Fabrication, Design, and Testing (4/8)**

Prerequisite: MN 136 and MN 137 — A study of the elements of metal fabrication, the methods for destructive and nondestructive testing. The procedures for shop fabrication and field erection.

MN 232**Technical Pipe Welding (5/8)**

Prerequisites: MN 136, MN 231 — To acquaint the student with the fundamentals of pipe welding in different positions, including 5G and 6G positions using the 6010 and 7018 electrode.

MN 234**Metallurgy (3/3)**

Prerequisite: TE 103, TE 104 — The application of metallurgical fundamentals of common metal. The behavior of metals under a variety of conditions, machining, welding, forming and heat treating. The behavior of metals under production and service conditions, including fatigue, corrosion, warpage and their prevention.

MN 235**CNC Machine Programming (3/3)**

Prerequisite: MN 119 or MN 199 — Students learn to program and manufacture a part from a part-print. Using computer numerically controlled (CNC) machines, they learn proper machine set-ups, G-code and conversational programming, and to machine the parts to part-print specifications.

MN 235A**CNC Machine Programming Module A (1/1.33)**

Prerequisite: MN 119 or MN 199 — 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 or MN 199 — 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 or MN 199 — 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 238**Advanced CNC Programming Applications (3/4)**

Prerequisites: MN 119, 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 220 — 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/laboratory combination.

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 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 or equivalent — Students learn the system of geometric dimensioning and how conventional and geometric tolerancing work together to assure uniformity of fit, function, and producibility of manufactured parts. Students learn to confirm tolerances and solve problems in quality assurance. Two hours lecture.

MN 253**Applied Quality Techniques 1 (3/3)**

Students apply their knowledge of managerial process control to solve actual industrial problems and learn to troubleshoot a manufacturing process using management theory. Students also learn techniques and theories of continuous quality improvement. Review of materials in preparation for the ASQC (Quality Technician Certification Examination) is also part of the course. Student will need a scientific calculator; no prior knowledge of statistics is required.

MN 254**Experimental Design (3/3)**

Prerequisite: MN 248, MN 249, MN 253

Students learn the statistical concepts of experimental design, starting with the classical approach and working up to the latest experimental design techniques of Taguchi and Shainin. How to apply specific experimental designs to specific applications, and how to modify experimental design models. Three hours lecture. Student will need a scientific calculator; no prior knowledge of statistics is required.

MN 255**Applied Quality Techniques 2 (3/3)**

Prerequisite: MN 253 — Students continue learning to apply statistics to problems of quality control. Topics include advanced statistical applications, manufacturing, hypothesis testing, inspection theory, regression, probability and measurement/sampling theory.

MN 256**Introduction to Coordinate Measuring Machines (2/2)**

Prerequisites: TE 103, MN 251 — 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: MN 251, 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: MN 251, 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.

MU – MUSIC**MU 99****Music Fundamentals (2/2)**

MU 99 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;

Corequisite: 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 — MU 102 is an integrated theory course designed primarily for freshman music majors and minors. The course deals with the development of part-writing skills through further studies in species counterpoint and four-voice chorale 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.

MU 105**Music Interpretation (1/1)**

Corequisite: 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)**

Corequisite: 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 Corequisite: 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.

MU 121**Applied Music Minor (1/1)**

Prerequisite: MU 112 Corequisite: MU 105 — Secondary requirement in instrumental/voice/piano for music majors or elective for non-music majors; placement by instructor. This class must be taken with MU 105. Minor study requires a half-hour lesson each week and one hour of practice/applied study each day. Applied Music Fee is charged. Applied Music is independent study and Department consent is required. This class must be taken with MU 105.

MU 122**Applied Music Minor (1/1)**

Prerequisite: MU 121 Corequisite: 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 day. Applied Music Fee is charged. Applied Music is independent study and Department consent is required. This class must be taken with MU 105

MU 141**Applied Music Minor (1/1)**

Prerequisite: MU 222 Corequisite: 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 day. Applied Music Fee is charged. Applied Music is independent study and Department consent is required. This class must be taken with MU 105.

MU 142**Applied Music Minor (1/1)**

Prerequisite: MU 141 Corequisite: 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 day. Applied Music Fee is charged. Applied Music is independent study and Department consent is required. This class must be taken with MU 105.

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.

MU 145**Advanced Music and Computers (2/2)**

Department Consent required
Prerequisite: MU 144 —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.

MU 151**Applied Music Major (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 152**Applied Music Major (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. An applied fee is charged.

MU 154**Basic Studio Techniques I (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. Department consent required. 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 acoustics affect sonic clarity, recording console use, the use of various recording storage mediums, 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. This course requires a separate lab. Fee is charged.

MU 169**Introduction to Piano 1 (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)**

Pre-requisite: MU 169 or pretest — Development of piano techniques; sight-playing, use of primary chords, transposition, and acquisition of standard piano repertoire. For students with little or no keyboard background who have prior music-reading experience. Class meets two hours a week.

MU 172**Piano Techniques 2 (1/2)**

Prerequisite: MU 171 or permission of instructor — Continuation of MU 171, with greater emphasis on keyboard facility, sight playing, and piano repertoire 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 repertoire 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. Repertoire 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 176**Classical Guitar 2 (1/2)**

Prerequisites: MU 175 or equivalent — This course is a continuation of Music 175, Classical Guitar 1. Students will further develop technique, scales, technical studies, music reading, and repertoire. Students who successfully complete this course may audition for admission into Music 151, Applied Music Guitar, for more advanced guitar study.

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 the guitar. Proper guitar techniques, chords, chord theory, accompaniment patterns, and styles will be taught and analyzed through instruction and listening.

MU 178**Aural Comprehension 1 (1/2)**

Pre-requisite: MU 100 or pretest **Corequisite:** MU 101 — The students will develop their aural capacity through exercises in beginning melodic and rhythmic dictation, mastery of solfeggio and Curwin hand signs while singing melodies at sight will 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; **Corequisite:** MU 102 — The student will continue developing aural capacity through exercises in intermediate melodic and rhythmic dictation, mastery of solfeggio and Curwin hand signs while singing intermediate melodies at sight. 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 181**Vocal Techniques-1 (1/2)**

Group Voice Techniques is beginning vocal instruction for students majoring in voice. Students will study basic vocal technique, vocal anatomy, breath management, diction for singers, posture for singing, and performance deportment. Students will begin to apply these techniques by learning folk songs and simple arts songs. Students who wish to study applied voice must first complete MU 181.

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 190**Campus Band (1/2)**

Campus Band is designed for students who are either music majors with a non-instrumental applied emphasis or who have a major outside music. The group will perform works from original and transcribed sources. Campus Band is open to all GRCC students with previous experience performing on band instruments. No audition is required to enroll.

MU 191**Choir (1/3)**

College Choir is a singing organization which focus 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**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 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**Wind Ensemble (1/3)**

The Wind Ensemble will perform works for winds and percussion from original and transcribed sources. Four semesters of MU 195 are required for music majors whose applied emphasis is a band instrument. Students must audition to enroll in and become members of this ensemble.

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 required.

MU 201**Advanced Music Theory 1 (3/3)**

Prerequisite: MU 102; **Corequisite:**

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 concurrently with MU 201.

MU 202**Advanced Music Theory 2 (3/3)**

Prerequisites: MU 201; **Corequisite:**

MU 209 — This course is a continuation of MU 201. It extends the 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 MU209 concurrently with MU202.

MU 208**Aural Comprehension 3 (1/2)**

Prerequisite: MU 179; **Corequisite**

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; **Corequisite:**

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 221**Applied Music Minor (1/1)**

Prerequisite: MU 122 **Corequisite:**

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 day. Applied Music Fee is charged. Applied Music is independent study and Department consent is required.

MU 222**Applied Music Minor (1/1)****Prerequisite:** MU 221 **Corequisite:**

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 day. Applied Music Fee is charged. Applied Music is independent study and Department consent is required.

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 1770's. 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 I (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 II (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/class-work) followed by a six-week "performance" tour of area middle and high schools.

MU 251**Applied Music 3 (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. Sophomore-first semester level 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. Additional Applied Music Fee of \$350 will be charged.

MU 252**Applied Music 4 (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. Sophomore - second semester level 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. Additional Applied Music Fee of \$350 will be charged.

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. There is a required lab fee and applied music fee charged for this course.

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 CLS 101(3/3)**

Prerequisite: MU 283, MU 172, 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 course solidifies that MIDI technology is an integral part of music production and the recording studio control room. This course requires a separate lab.

MU 294**Shades of Blue (1/1)**

Shades of Blue is a vocal jazz ensemble. The primary concern of this course is artistic and creative vocal jazz for ensemble performance. Advanced solo experience, microphone techniques, and vocal improvisation are part of the course offering. Students who audition will prepare a vocal solo from the Broadway, pop, vocal, or vocal jazz idiom. Students will also sing segments of the ensemble music.

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, 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 Intervention I (3/5)**

Prerequisite: Formal acceptance into the OTA program, BI 121; **Co-requisites:** OT 102, BI 104, BI 122 — This course is for first year Occupational Therapy Assistant students. It is an introduction to disabling conditions, purposeful activities and treatment specific to the geriatric population. Students will learn skills of planning, teaching, and analyzing activities, and examine the role of COTA as an Activity Director. Offered Fall semester only.

OT 109**Therapeutic Intervention II (3/5)**

Prerequisites: OT 102, OT 104, OT 108, BI 121, BI 122 **Co-requisites:** OT 110, PY 231, CD 118 — This course is for students in the OTA program. The class will focus on specialized Occupational Therapy activities and their application to the treatment of children. Topics include self-care, play-leisure activities, evaluation of developmental, gross/fine and sensory motor areas, use of mobility aids, splint fabrication and department management.

OT 110**Disabling Conditions (4/4)**

Prerequisites: BI 122, OT 102, OT 104, OT 108, PY 201 ; **Co-requisites:** OT 109, 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 III (3/5)**

Prerequisites: OT 102, 104, 108, 109, 110;

Co-requisites: GH 120, OT 214, 220, 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, 104, 108, 109, 110;

Co-requisites: OT 208, 220, 224 — This

course is for second year students in the Occupational Therapy Assistant program. Students will investigate movement in the context of occupation and activity; a study of structural anatomy, movement, basic biomechanical principles, and normal and abnormal extremity function. Clinical applications in Occupational Therapy assessment, intervention and documentation in the areas of posture, body mechanics, mobility and balance, range of motion, muscle strength, basic exercise, positioning, bed mobility, and transfers will be utilized.

OT 220**Fieldwork I (1/3)**

Prerequisites: OT 102, OT 104, OT 108, OT 109, OT 110, BI 121, BI 122, PY 201, PY 231, CD 118. CD 120, WE 156; **Co-requisites:** OT 208, 214, 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, WE 156, PY 201, PY 231 **Co-requisites:** OT 208, 214, 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, 104, 108, 109, 110, 208, 214, 220, 224, BI 121, BI 122, PY 201, PY 231, CD 118, CD 120, GH 120; **Co-requisite:** OT 235 — Fieldwork experience in treatment settings supervised by OTR and/ 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, 104, 108, 109, 110, 208, 214, 220, 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.

PC – PHYSICAL SCIENCE**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.

PC 151**The Science of Light, Optics and Vision (4/6)**

The study of the nature, behavior and measurement of light. The course topics will include lenses and mirrors, vision and perception, color, and wave properties of light. The course has particular application for students in photography and is of special interest for students in art and other studies where knowledge of light and color are used. The course requires a minimum amount of mathematics such as addition, subtraction, multiplication and division, though scientific notation is also discussed and used. Four hours lecture/two hours lab.

PE – PHYSICAL EDUCATION**PE 180****Football Theory (2/3)**

To acquaint students with the sport of football. This will include not only offense, defense and special teams, but coaching philosophy regarding staff selection, recruiting and the overall program.

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.

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.

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. (Fall - Winter)

PE 184**Principles of Physical Education (3/3)**

Nature of health, physical education and recreation and its place in general education; 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 This class will also allow students to get hands-on experience at area elementary schools. One day a week we will be at GRCC the other day we will be at area elementary schools working with the students.

PE 185**Sports Officiating (2/3)**

Rules of the major sports, game management, Officiating mechanics, relationships with coaches, players and fans. Students are urged to seek licensure from the State Athletic Association. Students interested in a coaching careers are taught the rules of the games.

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. (Winter - Summer)

PE 195**Water Safety Instruction (2/3)**

Prerequisite: PE 144 or PE 145 or **Instructor Permission** — 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.

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.

PE 201**Title IX: Women in Athletics (3/3)**

This course is designed to provide students with a study of the 1972 Title IX legislation and its relationship with inter-scholastic and inter-collegiate athletics. The legislation's socio-historical implications on women and sports will be explored. 3 credit hours.

PE 203**The Obesity Epidemic (3/3)**

This course will explore the obesity/overweight issues facing Americans. Topics will include assessment, evaluation, and practice of physical fitness and health behaviors. It will also provide an opportunity to develop a personal fitness program focusing on maintaining or achieving a healthy body composition.

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 125**College Physics I (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 II (4/7)**

Prerequisite: PH 125 — A basic non-calculus course in general physics for non-physical science majors. Includes the study of waves, electricity and magnetism, light and optics, and topics in modern 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 II (5/8)**

Prerequisite: PH 245 — Electricity, magnetism, waves, and optics. Calculus sequence physics course for engineers, physicists, and other science majors requiring the calculus physics sequence. Three hours lecture/three hours lab/two hours discussion.

PL – PHILOSOPHY**PL 201****Introduction to Philosophy (3/3)**

This course includes a consideration of some basic problems of philosophy, philosophic and scientific knowledge, the mind and body, the nature of humanity and self-identity, and 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**Contemporary Moral Choices (3/3)**

Students will examine a number of ethical issues as they relate our modern world. Students will address issues and questions concentrating on how moral standards apply particularly to contemporary moral concerns.

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.

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** PN 115, GH 125, GH 126 (may be taken concurrently) — Physical, social, emotional and developmental concepts that influence health and wellness across the lifespan 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.

PN 119**Direct Care I (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 II (7/10.5)**

Prerequisites: PN 119, GH 125 and GH 126 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 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 III (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 (5/7.5)**

Prerequisite: PN 141 — The student explores the role of the Practical Nurse in various care settings. Focus is on the care of groups of patients and collaboration with health team members. Offered Fall and Summer semesters.

PO – PHOTOGRAPHY**PO 101****Photography 1 (3/6)**

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 will establish methods for creative outcomes. Students will be able to use either a Digital Camera or a Film Camera to achieve the objectives of the course. Students must own or have use of a fully adjustable Digital Camera or a 35mm, fully adjustable SLR camera. Six hours lecture/lab combination.

PO 102**Photography 2 (3/6)**

Prerequisite: PO 101 — Continuation of PO 101, with further investigation into sensitive processes and creative applications of advanced photographic methods. Advancement of conceptual development and critical theory direct the outcomes. Adobe Photoshop and ink jet printers are used to introduce image processing and digital printing concepts and skills. Students will be able to use either a Digital Camera or a Film Camera to achieve the objectives of the course. Students must own or have use of a fully adjustable Digital Camera capable of shooting in RAW format and interchangeable lens or a 35mm, fully adjustable SLR camera. Six hours lecture/lab.

PO 105**History of Photography as Art (3/3)**

This is a mediated lecture course that studies the history of photography as an art form, since its inception in 1839, with special emphasis on its contribution to past visual arts and social history, as well as to contemporary art. Topics include the lives and works of the key photographers, the historical processes (both silver and alternative), and the basic categories.

PO 106**Digital Image Processing 1 (3/6)**

Prerequisites: PO 102 and AT 130 — PO 106 is an exploration of the principles, processes, and equipment that photographers utilize to achieve technical and creative control of the luminance, contrast, and color of digital image files. Advanced photography students will apply information and techniques to create original photographic imagery. Six hours lecture/lab combination.

PO 107**Digital Imaging Processing 2 - Color (3/6)**

Prerequisites: PO 106, AT 131, and AT 140 PO 107 is an investigation of the processes, technology and strategies needed in the production of inkjet color prints from scanned slides and direct digital files onto archival inkjet media. Using Adobe Photoshop and utilizing RAW format digital files, students will learn skills necessary for the creation of original and expressive photographic image making. Three credits/Six contact hours.

PO 126**Film Image Processing - 1 (3/6)**

Prerequisites: PO 102 and AT 130 — A course dealing with the creation of expressive photographic images utilizing 35 mm film and darkroom skills. Archival processing, both film and paper, contrast control both in camera and in the darkroom as well as instruction in Ansel Adam's method of exposure control called the Zone System will be explored to create original, expressive photographic images. Six hours lecture/lab combination.

PO 127**Film Image Processing 2 (3/6)**

Prerequisites: PO 126 and AT 140

PO 127 is an investigation into the expressive and technical darkroom skills needed by the black and white photographic artist. Techniques for the production of artistic and personal images of professional quality are taught. Six hours lecture/lab combination.

PO 220**View Camera:****Large Format Photography (3/6)**

Prerequisite: PO 127 — A course dealing with the creation of expressive photographic images through the use and operation of the 4x5 view camera: equipment, lens, swings and tilts, perspective control and correction. Printing and processing of large format negatives with auto-processing and manual equipment will be explored. Six hours lecture/lab combination

PO 230**Digital Image****Processing Applications (3/6)**

Prerequisite: PO 106 — Application of digital image processing techniques with an emphasis on aesthetic, concept, and skill development. Apple computers and professional image editing software (Adobe Photoshop) are utilized for image retouching, enhancement, manipulation, compositing, and creative transformation. Three credit hours/Six contact hours.

PO 240**Studio Portrait Techniques (3/6)**

Prerequisites: PO 220 or PO 230 — This course examines current approaches to creating photographic portraits for fine art, documentary, and commercial applications. It includes discussions of aesthetic, technical, and interpersonal competencies required to create expressive portraits. Students may elect to use digital or film technologies. Six hours lecture/lab combination.

PO 250**Studio Illustrative Techniques (3/6)**

Prerequisites: PO 220 or PO 230 — Specialized instruction for creating expressive, original photographs using controlled artificial light. An exploration of the aesthetic and technical applications of light theory and techniques for creating fine art and illustrative photographs. Students may elect to use film or digital technology. Six hours lecture/lab combination.

PO 252**Introduction to****Television Production (3/6)**

This course is designed as an introduction to the elements and principles of basic television pre-production, field production and post-production with emphasis on news, corporate, and commercial communications. Camera, sound and lighting techniques will be covered. Editing will be in a digital environment using Apple Computer's Video Editing Suite: Final Cut Pro 4, LiveType, Soundtrack and QuickTime. Students will supply their own video camera and some other materials. Six hours lecture/lab combination.

PS – POLITICAL SCIENCE**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 & Local Politics (3/3)**

Recommended: EN 102 or equivalent

This course examines the structure, functions, and issues of state and local government with an emphasis on the State of Michigan. It covers the separation of powers and overlapping jurisdictions of counties, townships, cities, villages, and school districts. The issues of sovereignty, crime, education, economic development, and government finances will also be discussed. This course has a service learning component requiring significant research, writing, and proper citation of sources.

PS 201**Comparative Governments (3/3)**

This course will examine government and domestic politics as it exists in other countries around the world. It will use states in Europe, Asia, Africa, and the Americas as case studies. Students will examine political, cultural, economic, and historical reasons for similarities and differences between countries. The United States will be useful as a point of reference. In the process students will discover alternative ways of dealing with familiar problems, and a greater understanding of the differences around our world.

PS 202**International Relations (3/3)**

Prerequisite: PS 110 — An introductory survey of the basic concepts, issues, and methods characterizing this interdependent world in which we live. It provides students a depth of understanding of foreign policy objectives, international actors' interactions, and trends in the international system.

PS 215**The Survey of Asian Politics (4/4)**

The political, economic, and cultural structures of major Southeast Asian countries such as China, Japan, and South Korea will be discussed with an emphasis on their governments, public policy-making process, and policy areas. This introductory course will enable students to get a handle on the subject and get prepared for future career and intellectual development. Countries or regions under consideration can be arranged to meet specific demand.

PS 225**The Politics of the North of Ireland (3/3)**

This course will examine the government, domestic policies, political parties and interest groups present in the North of Ireland. Political, economic, cultural and ethnic issues will be explored and the historical development of these issues will be traced. Students will be expected to identify problems and alternatives to current issues facing the North of Ireland. This course is offered as an integral component of the Irish Foreign Studies Program and is only offered in conjunction with the travel program in Ireland.

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.

PY – PSYCHOLOGY**PY 101****Learning to Adjust to College (3/3)**

This is a non-transfer psychology course for students in the college's Academic Foundations Program. It is designed to assist students in becoming active learners through self-assessment, self-exploration and building an understanding of the college environment. This class uses psychology to help students explore, understand, and problem solve larger life issues that may be interfering with their success as a learner.

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, bio-feedback, and physical exercise.

PY 201**General Psychology (3/3)**

Psychology is the scientific study of behavior and mental processes. This course is an introduction to the many different areas of which this discipline is comprised. These areas include: psychological theories, research methods, the relationship between brain and behavior, human development, learning, memory, cognition, group dynamics, personality theories and the identification and treatment of abnormal behavior.

PY 203**Applied Psychology (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)**

Prerequisite: PY201 — Abnormal Psychology is the scientific study of abnormal human behavior. This course examines contemporary scientific understanding of a wide variety of psychological disorders that affect people. Of particular focus are the causes, symptoms and effective treatment of psychological disorders from psychological, biological and sociocultural perspectives.

PY 232**Developmental Psychology (3/3)**

Prerequisite: PY 201 — This course is the scientific study of how people change and remain the same from conception through death. Development is explored across the physical, cognitive, and psychosocial domains.

PY 233**Child Psychology (3/3)**

Prerequisite: PY 201 — Child Psychology is the study of human development from conception through adolescence. The cognitive, physical, and psychosocial development of children and adolescents is explored through theory and research. Students are encouraged to apply knowledge of child development to everyday life.

PY 234**Adolescent Psychology (3/3)**

Prerequisite: PY 201 — This course explores human development during adolescence (11-18 yrs) and early adulthood (18-25 yrs). The course emphasizes the role of culture and historical context in shaping physical, cognitive, and psychosocial development during this age period.

PY 251**Education Psychology (3/3)**

Prerequisite: PY 201 — This course studies how psychology is applied to understanding teaching and learning in educational settings. It is designed to meet the pre-professional requirements for students who are planning on transferring as education majors to a four year school; therefore there is an out of classroom service learning component to the course.

PY 260**Social Psychology (3/3)**

Prerequisite: PY 201 — This course is intended for students with a good foundation in psychology. Students will explore the relationship between individual behaviors and mental processes within the social environment. Typical applications of social psychology include social cognition and perception, attitudes, conformity, stereotyping, gender, group process, and aggression.

PY 263**Psychology of Learning (3/3)**

Prerequisite: PY 201 — This course is intended for students with a good foundation in psychology. The course provides a historical, theoretical, and applied perspective on the psychology of learning. Topics include Behaviorism (classical and operant conditioning), Social Learning Theory, and Cognitivism (information-processing, constructivism, and socio-constructivism).

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.

RD – READING**RD 97****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 98**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 – 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. Student will simulate peer-positioning & operate radiographic machines, dispensing ionizing radiation to radiograph phantom anatomical body parts of upper & lower extremities, abdomen & chest. Didactic tests & Laboratory experiments are required.

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 & 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, 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, 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, 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, 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.

**SC – SPEECH
(See Communications)****SL – SIGN LANGUAGE****SL 150****Orientation to Deafness (3/3)**

Co-requisite or Prerequisite: SL 171 — This course provides introductory exposure to both technology and cultural perspectives and the implications of those perspectives for those that are deaf. Other topics to be covered include elements of the communication process, nonverbal communication, basic sign language terminology use and signs, both family and group dynamics, research, and oral presentations. This course is designed for students that wish to acquire knowledge of deaf culture and explore the field of sign language interpreting.

SL 155**Fingerspelling (2/2)**

Co-requisite or Prerequisite: SL 171
American Sign Language I — Fingerspelling is designed to provide the student with instruction and practice focused solely in both expressive and receptive fingerspelling skills as well as concentrated instruction in the use of numbers in American Sign Language. This course is intended for students that wish to explore the field of Sign Language interpreting.

SL 171**American Sign Language 1 (3/3)**

Co-requisite or Prerequisite: SL 150 — This course is a basic introduction to American Sign Language and provides basic knowledge of American Sign Language vocabulary and grammar. Students in this course will learn the manual alphabet used in fingerspelling, 400 to 500 signs used in ASL, rules on grammar and syntax used in ASL, and discuss conversational techniques used with deaf adults.

SL 172**American Sign Language 2 (3/3)**

Prerequisite: SL 171 — American Sign Language I. This course is designed to increase knowledge and use of American Sign Language vocabulary and grammar. Students in this course will examine grammatical elements in ASL, and incorporate 300 to 500 more ASL signs to their vocabulary.

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)**

This course covers principles of society with reference to culture, population, social stratification, institutions, socialization of the child, group dynamics, personality, social change, gender and behavior, social roles and communities; rational interpretation of man and the culture in which he/she lives.

SO 254**Social Problems (3/3)**

This is an analysis of such major social problems as family and generation problems, divorce, youth contra-culture, the status of women, crime and delinquency, racial, ethnic, and religious prejudice, environmental crisis, population, and urban and rural problems.

SO 260**Race & 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 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 will not receive credit for both.

SO 262**Aging in America (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. GO 262 and SO 262 are equivalent courses. Students will not receive credit for both.

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. GO 263 and SO 263 are equivalent courses. Students will not receive credit for both.

SO 265**Crime in Society (3/3)**

Prerequisite: SO 251 + 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)**

Prerequisite: SO 251 — Principles of Sociology. 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.

SP – SPANISH**SP 101****Introductory Spanish-1 (4/4)**

Introduction to Spanish. Spanish 101 introduces the pronunciation, vocabulary and basic grammar of Spanish. In addition, the course treats the culture of Spanish-speaking countries. Listening comprehension and speaking are also emphasized with the aid of the International Language Laboratory.

SP 102**Introductory Spanish-2 (4/4)**

Prerequisite: SP 101 or equivalent

A continuation of the study of Spanish begun in Spanish 101 or its equivalent. Spanish 102 focuses on the tenses, grammar and structure of the Spanish language, increases vocabulary and provides opportunity for the student to increase speaking and comprehension skills, as well as composition ability. Increased use of the International Language Laboratory 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.

SP 231**Intermediate Spanish-1 (4/4)**

Prerequisite : A “C” or better in SP 102 or equivalent or approval by the department

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. Software is used in the Language Laboratory for review of grammar.

SP 232**Intermediate Spanish-2 (4/4)**

Prerequisite : A “C” or better in SP 231 or equivalent or departmental consent

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 use for study of literary selections and review of grammar topics.

SS – SOCIAL SCIENCE**SS 120****Intro 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.

SW – SOCIAL WORK**SW 102****Introduction To Social Welfare (4/4)**

Prerequisite: SO 205, PS 110 or permission of the Instructor — Provides historical development of social welfare in the Old and New worlds. Overview of Social Work, Social Welfare and role of the Social Workers. Description of the establishment of Social Welfare and Social Service Programs existing in the United States. Discussion of values underlying the existing systems.

SW 103**Social Work Interviewing and Assessment (4/4)**

Prerequisite: SO 205, SW 102 or permission of the Instructor — Introduction to types, purposes and stages of interviewing. Basic empathy training. Skill development for observation, listening, non-verbal communication, rapport-building, information giving and information gathering. Beginning assessment, monitoring and working with culturally diverse, oppressed, or psychologically maladaptive clients.

SW 220**Social Work with Individuals, Couples and Families (4/4)**

Prerequisites: PY 201, SO 251, SO 205, SW 103 — This course will provide an overview on the methods and values of Social Work practice with individuals, couples and families. The primary focus will be on generalist and direct service role of entry-level professionals. This course would be useful to students who are required to take coursework for their social service technician licensure as required by the State of Michigan Department of Community Health.

TE – TECHNOLOGY**Other courses related to Technology:**

- 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 104**Advanced Technical Mathematics (3/3)**

Prerequisites: TE 103 — Mathematical operations that cover interpretation and conversion of measurement units, significant figures, applied geometry, trigonometric functions of right and oblique triangles, charts, graphs, basic statistical calculations and formulas.

TE 114**Material Science (4/5)**

Prerequisite: TE 103 or equivalent — 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 hour lecture/lab combination.

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**Coop Education in Technology-1 (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 per week under supervision at approved employment and the instructor monitors their performance. 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 the course.

TE 283**Cooperative Education in Technology 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 per week under supervision at approved employment and the instructor monitors their performance. 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 the course.

TH – THEATRE**TH 114****Ballet-1 (1/2)**

Offers a first semester of ballet to those students who have had less than 3 years of Classical Ballet or no dance training. It explores the uses of the arms, head, torso, legs and feet as it relates to moving across the floor while jumping and running.

TH 115**Jazz 1 (1/2)**

Offers a first semester of Jazz to those students who have had no Jazz training or have received less than 2 years of Jazz Dance or Hip-Hop. It explores the uses of the arms, head, torso, legs and feet as it relates to moving in rhythm while walking, running, turning and jumping.

TH 116**Tap 1 (1/2)**

Offers a first semester of Tap to those students who have had no prior tap experience. It introduces the student to the basics of tap dance and rhythm.

TH 214**Ballet 2 (1/2)**

Prerequisite: TH 114 or equivalent — Offers a second semester of ballet to those students who have satisfactorily completed TH 114 or those who have received 3 or more years of Classical Ballet. It explores more fully the uses of the arms, head, torso, legs and feet as it relates to moving across the floor while turning, jumping and running.

TH 215**Jazz 2 (1/2)**

Prerequisite: TH 115 or equivalent — Offers a second semester of jazz to those students who have satisfactorily completed TH 115 or those who have received 2 or more years of Jazz Dance or Hip-Hop. It explores more fully the uses of the arms, head, torso, legs and feet as it relates to moving in rhythm while walking, running, turning and jumping

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 241**College Players I (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 II (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 III (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, voice, developing the imagination, and performance of cuttings from plays. This is the basic performance class in theater.

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 craft persons 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 255**Acting III: Classical Acting (3/3)**

Prerequisites: TH 245, TH 247 — Introduces students to classical texts and presents them with skills and techniques to help them explicate and interpret those texts as actors. Emphasis will concentrate on Shakespeare with some work in classical Greek, Moliere, and contemporary "classics" (e.g., Chekhov, Ibsen, etc.)

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 II (2/2)**

The continued study of technology and craftsmanship involved in backstage production with specific focus on lighting and sound production of the theater. 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 collaboration, casting, actor coaching, and conceptualization.

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 (616) 234-3670

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 in a laboratory environment. Simple calculations of force and exploration of industrial applications will help students understand the uses of fluid power in industry. One hour lecture, one hour lab.

TR – TRANSPORTATION**TR 102****Basic Vehicle Performance (2/3)**

This course provides the student an understanding of industry safety practices, automotive professional associations, automotive tools and equipment, fasteners, measurements, bearing, seals, and vehicle performance. In addition, lab time is devoted to application of the above topics. Three hours lecture laboratory combination.

TR 103**Auto Engine Design and Servicing (4/6)**

This course Provides the student 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)**

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)**

Nomenclature, theory of operation, and service procedures on front and rear suspension systems; alignment principles are learned, with laboratory activities centered on setting of all alignment angles, shop safety and shop procedures. Four hours lecture/lab combination

TR 160**Automotive Driveability (2/4)**

Students learn to service automotive power train control systems; the design and theory of such systems are studied. Service procedures and shop safety are emphasized. Four hours lecture/lab combination.

TR 180**Applied Auto Servicing (4/8)**

Provides students with laboratory experiences & 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)**

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**Automotive****Electronic Controls (2/4)**

Overview of the automotive electronic control systems that are available on late-model vehicles. Students 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, operation, 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)**

Students learn to service clutch assemblies, manual drive trains and transaxles, also automatic transmission and transaxles are 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.

WE – WELLNESS**WE 102****Volleyball (1/2)**

Instruction on the basic skills & fundamentals, rules & strategies the sport of volleyball.

WE 104**Touch Football (1/2)**

Beginning techniques and skill development. Classes meet four hours per week for eight weeks. (Winter)

WE 105**Basketball (1/2)**

Beginning and intermediate techniques and skill development in basketball in a recreational structure.

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.

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.

WE 126**Walking for Fitness (1/2)**

Instruction on fitness walking and how it can improve one's aerobic fitness level and overall health.

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)**

Beginning and intermediate techniques and skill development in soccer in a recreational structure.

WE 130**Tennis (1/2)**

Fundamentals of tennis for the beginner and intermediate.

WE 131**Badminton (1/2)**

Badminton is a recreational sport with great carryover 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.

WE 132**Golf (1/2)**

A general physical education course designed to develop skills and techniques. Etiquette on and around a golf course is also emphasized.

WE 133**Cycling (1/2)**

Designed to advance the student from one-speed bicycling to multi-gear models for leisure time activities or carry over value. Simple repairs, fundamental riding skills, conditioning, and trips.

WE 140**Personal Defense (1/2)**

A practical course for personal defense. In addition, knowledge on the basic concepts of fitness and wellness.

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.

WE 142**Beginning Racquetball (1/2)**

An introductory course in racquetball and life-long fitness and wellness.

WE 143**Water Polo (1/2)**

Prerequisites: PE 144 or PE 145 — 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 in swimming and life-long fitness and wellness.

WE 145**Intermediate Swimming (1/2)**

Fundamentals in swimming and life-long fitness and wellness.

WE 152**Bowling (1/2)**

Fundamentals of bowling for the beginner and the basic principles of life-long fitness and wellness.

WE 155**Introduction to Free Weight Training (1/2)**

Introduction to 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.

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.

WE 157**Elementary Games & Rhythms (1/2)**

A general course designed to present a systematic method of teaching physical education in the elementary schools.

WE 165**Dynamics of Fitness (1/2)**

Acquaints students with fitness development methods and techniques in developing lifetime fitness programs; including aerobic fitness, nutrition, ideal weight, handling stress, and other fitness components.

WE 166**Individual Aerobic Conditioning (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.

WE 192**Camping and Canoeing (1/2)**

Prerequisite Must be able to swim — Basic elements of camping skills and compass use. Equipment selection and use. Cooking with few utensils. Basic water and camping safety. Basic canoeing strokes. Two day canoe trip down a Michigan river with one overnight camp out.

WST – WOMEN'S STUDIES**WST 200****Introduction to Women's Studies (3/3)**

Prerequisites: EN 101 — WST 200 is an interdisciplinary introduction to Women's Studies and explores the broad dimensions, principles, and theories of the field by investigating the shaping of gender roles, behaviors, and expectations as evidenced in literature, social sciences, natural sciences, religion and philosophy. The course enhances students' critical awareness of how gender operates in institutional and cultural contexts and in their own lives. This course welcomes all students.

**ZOOLOGY
(See BI 104)**

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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 _____ (Required for Financial Aid) Gender Female Male

Date of Birth (00/00/00) _____ (Required) Is English your primary language? Yes No
(Month/Day/Year)

Are you a U.S. citizen? Yes No (If no, indicate your current status in the U.S.) (See Citizenship Definitions on Page 5):
 Permanent Resident Refugee Political Asylee H-1/H-4 Worker/Dependent B-1/B-2 Tourist/Visitor Other _____ (Specify)

Predominant Ethnic Background (This is not used in the Admission process. Used for reporting purposes only):
 American Indian/Alaskan Native African American Asian
 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 page 240, #1)

Previous Address _____

County of Residence _____

Phone _____ E-mail address _____

I plan to begin taking classes:

Term Fall 200 _____ Winter 200 _____ Summer 200 _____

High School Code/GED _____
(Available on page 240, #3)

Program Degree Seeking/Transfer
 Personal Interest/Non-Degree

Name of High School/GED _____

Date of Graduation (00/00) _____ / _____
(Month/Year)

Academic Plan _____
(Available on page 240, #2)

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

A. Did either of your parents complete a four-year degree program?
 Yes No

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

Have you participated in any theater/drama groups? (DRA)
 Yes No

B. What is your primary reason for attending GRCC? (Mark one)

D. How did you become interested in GRCC? (Mark all that apply)

Have you ever been involved in a volunteer or leadership experience? (COM)
 Yes No

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

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

Did you remember to sign your application?

F. Do you work? Yes No

#1 SCHOOL DISTRICT RESIDENCY CODES

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

#2 MAJORS (Alphabetical order) Please select your plan from those listed below. You may change your plan whenever your educational goals change.

1-YEAR AND 2-YEAR DEGREE OPTIONS

Program Code	
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 Programming 149	
Corrections 152	
Culinary Arts 151	
Culinary Management 155	
Electronic Publishing, Cert 142	
Electronics Servicing, Cert 926	
Electronics Technology 906	
Executive Office Administration 112	
Fashion Merchandising 121	
Gerontology, Cert 817	
IBM e-Business Application Dev 715	
Industrial Maintenance Technology 985	
Industrial Maintenance Technology, Cert 918	
Industrial Technology, Cert 919	
Interior Decorating & Design 122	
Landscape Management 652	
Law Enforcement 808	
Management & Supervision 127	
Marketing 125	
Marketing, Cert 116	
MultiMedia Communication Technologies 145	
Networking 147	
Office Assistant Studies, Cert 117	
Para Professional 420	
Plastics Manufacturing Technology 935	
Plastics Manufacturing Technology, Cert 945	
Quality Science 939	

Quality Science, Cert 940	
Music Recording Technology 212	
Technology Option 900	
Tooling and Manufacturing , Cert 920	
Tooling and Manufacturing Technology 908	
Unix System Administration, Cert 143	
Occupational Education/Undecided 008	
Web-Design/Develop 160	
Web-Technical Support 161	
Web Technical Support, Cert 163	
Web Design/Develop, Cert 162	
Welding, Cert 931	
Welding Technology 932	
Juvenile Services 153	

HEALTH

Program Code	
Advanced Standing Nursing (Must have PN degree or certificate to apply) 329	
Associate Degree Nursing (RN) 321	
Dental Assisting 322	
Dental Hygiene 324	
Occupational Therapy Assistant 328	
Practical Nursing 323	
Practical Nursing, Part Time (Days Only) 354	
Radiologic Technology 325	

LIBERAL ARTS/TRANSFER

Program Code	
Architecture, Trf 901	
Art, Trf 201	
Biology, Trf 501	
Business Administration, Trf 101	
Chemistry, Trf 701	
Computer Science, Trf 712	
Criminal Justice Trf 807	
Crop/Soil Science Trf 520	
Economics, Trf 802	
Engineering, Trf 702	
Engineering Technology, WMU, Trf 799	
English, Trf 401	
Environmental Science, Trf 519	
Fine Arts 251	
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	
Liberal Arts, General 006	
Library Science, Trf 403	
Manufacturing Engineering Tech, FSU 797	
Mathematics, Trf 704	
Medical Technology, Trf 507	
Mortuary Science, Trf 509	
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 511	
(Note: This is not GRCC's Nursing Program)	
Occupational Therapy, Trf 513	
Oceanography, Trf 711	
Pharmacy, Trf 512	
Photography 250	
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	
Pre-Elementary Education, Trf 804	
Theatre, Trf 430	
Transfer/Undecided 007	
Water Purification Technology, Trf 650	
Undecided 000	

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

GRCC143C-3/07

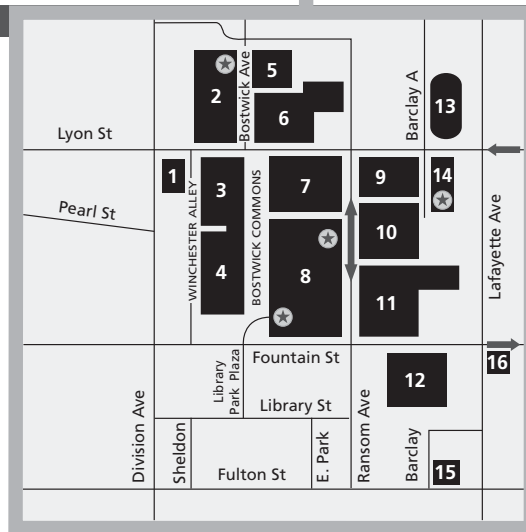
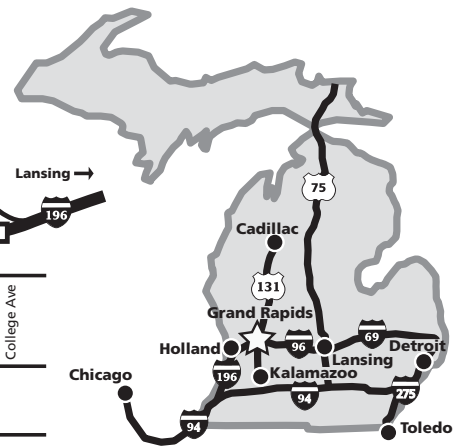
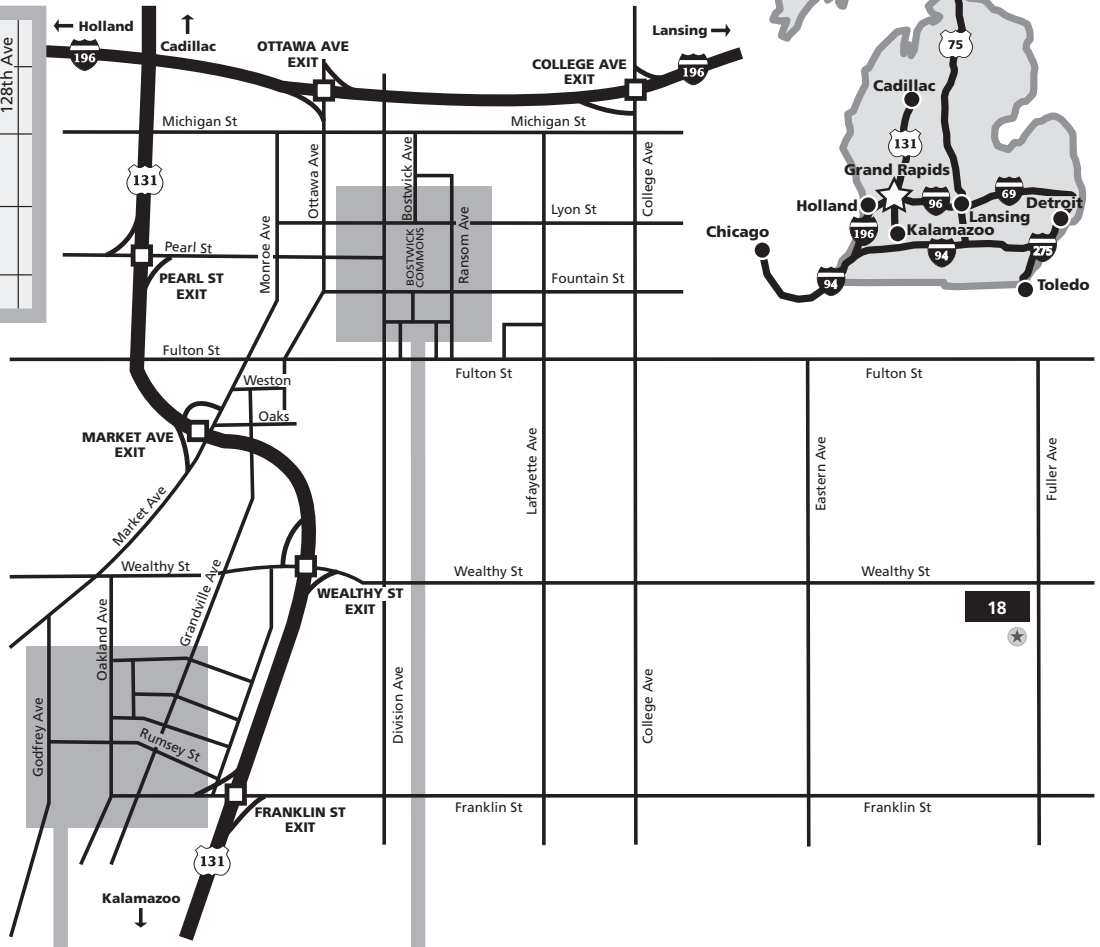
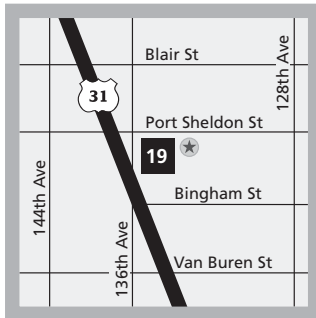


Mail the application and \$20 NON-REFUNDABLE fee to:

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

#3 HIGH SCHOOL CODES

Allegan High School 0014030	Godwin Heights High School 0014379	Northview High School 0014387
Allendale High School 0014031	Grand Haven High School 0014365	Other Michigan High School 0THMIHS
Belding High School 0014078	Grand Rapids Baptist High School 0014380	Ottawa Hills High School 0014388
Byron Center High School 0014127	Grand Rapids Christian High School 0014373	Out of State High School 0THERHS
Caledonia High School 0014130	Grandville High School 0014398	Plymouth Christian High School 0014389
Calvin Christian High School 0014397	Grant High School 0014399	Ravenna High School 0014747
Catholic Central High School 0014370	Greenville High School 0014404	Rockford High School 0014763
Cedar Springs High School 0014147	Hamilton High School 0014412	Rogers High School 0014390
Central High School 0014371	Holland High School 0014447	Saranac High School 0014808
City High School 0014372	Holland Christian High School 0014444	South Christian High School 0014392
Community Education Diploma COMMED	Home Schooled HOMESCH	Sparta High School 0014825
Comstock Park High School 0014178	Hopkins High School 0014456	Spring Lake High School 0014826
Coopersville High School 0014181	Horizons High School 0014921	Thornapple-Kellogg High School 0014590
Covenant Christian High School 0014879	Hudsonville High School 0014463	Tri-County High School 0014459
Creston High School 0014374	Ionia High School 0014474	Union High School 0014394
East Grand Rapids High School 0014375	Jonson High School 0014491	Unity Christian High School 0014464
East Kentwood High School 0014384	Kelloggsville High School 0014382	Wayland High School 0014897
Foreign High School FOREIGNHS	Kenowa Hills High School 0014383	Westbridge Academy 0014368
Forest Hills Central High School 0014378	Kent City Community High School 0014503	West Catholic High School 0014395
Forest Hills Northern High School 0014377	Lakewood High School 0014917	West Ottawa High School 0014449
Fremont High School 0014343	Lee High School 0014385	Wyoming Park High School 0014396
Fruitport High School 0014345	Lowell High School 0014548	Zeeland High School 0014927
General Education Diploma GED	Newaygo High School 0014643	



GRCC Buildings and Parking

1. College Park Plaza
2. Lyon Parking Ramp ★
3. Cook Academic Hall
4. Main Building
5. Calkins Science Center
6. Gerald R. Ford Fieldhouse
7. Student Center
8. Bostwick Parking Ramp ★
9. Music Center
10. Learning Center
11. Applied Technology Center
12. Spectrum Theater
13. Practice Field
14. Barclay Parking Lot ★
15. Preschool (First United Methodist Church)
16. McCabe-Marlowe House
17. The Leslie E. Tassell M-TEC® ★
18. The Learning Corner @ Wealthy Street ★
19. Patrick A. Thompson M-TEC® ★

★ Student/Visitor Parking

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



MISSION

Our mission is 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.

VALUES

Responsiveness
Accountability
Innovation
Diversity
Excellence
Respectfulness
Service

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. 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.

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Grand Rapids, Michigan 49503-3295