

JACKSON COLLEGE

CATALOG 2014-2015

Welcome to Jackson College!

We welcome all who are pursuing higher education and learning to explore the opportunities available at Jackson College! Building on a tradition of excellence from the past 85 years of educating students, the College continues to progress with an exciting new development, the offering of the first-ever baccalaureate, or bachelor's degree. Beginning in fall 2014, Jackson College will offer a Bachelor of Science in Energy Systems Management, a new academic program designed to prepare workers for careers in the energy field.



Higher education is becoming imperative for a career in today's workplace; gone are the days when simply a high school diploma could lead you to a job with a livable wage for a lifetime. The new bachelor's degree is one response to the changing needs of our communities; Jackson College continues to evaluate and enhance its programs to meet students' needs, with new classes and programs always under development. Classes are also offered in a variety of formats, at different locations and at different times, to serve today's students.

Jackson College offers a variety of programs in career-oriented fields and majors intended for transfer to a university. This catalog should provide you with information on courses and programs at the College to help you reach your goals. Our faculty and staff are eager to help you take your next steps, whether you are working toward an associate degree or certificate in one of our career programs, a program designed for transfer to a university, a shorter-term credential or courses to meet a specific need or purpose.

Get to know all about Jackson College. Familiarize yourself with our campuses so you can know your way around and take advantage of the opportunities available. Get to know your faculty; they can be your most valuable resource. Visit them during office hours, ask them questions from your classes, get to know a little about them. Also, take time to get to know some of your fellow students, who can offer friendship, study opportunities, or a helping hand.

I invite you to start your journey today by visiting any Jackson College location. Our caring staff can assist you in applying for college, understanding financial aid options, choosing a career field and registering for classes. Speak to one of our enrollment services staff to schedule a visit to campus, take a tour, listen in on a class, and attend a college activity.

Let us welcome you to the new Jackson College. How can we help you reach your goals?

Daniel J. Phelan
President

Welcome!

Hello and welcome from Jackson College! Thank you for your time and consideration of the College! We hope you will find your new future here!



At Jackson College, your success is our first priority. Jackson College offers a time of learning, excitement and new experiences for all students. We strive to provide you with a top-quality, meaningful and memorable college experience from your first interactions with our Student Services staff, throughout your studies and your graduation day! At Jackson College, you will find staff and administration who are eager to help you along the way, and teaching faculty who are experts in their field and can share their important knowledge with you. I hope you take full advantage of all the opportunities available as a Jackson College student.

This academic catalog lists the many programs and classes available at the College. Explore the many opportunities available and seek out which one you think will best fit your personal strengths and talents. The first step in any journey is deciding in what direction you are going; with more than 70 academic programs and transfer opportunities, there are options to fit nearly everyone.

Many resources are available to help you succeed. The College offers a wide range of services designed to help you achieve your goals:

- Tutoring at the Center for Student Success;
- Academic advising;
- Financial aid and related support services;
- Library, computers, breakout rooms and study lounges;
- Service learning and career placement;
- Student Life activities; honors programs; athletics;
- Special instructional strategies; and
- Campus View housing.

We want our Jackson College students to be successful at every level. When you are informed, you are better poised to make appropriate decisions regarding your education and your future. You can find detailed information about the institution on our web site. If you cannot find the answer that you are looking for, do not hesitate to contact one of our Student Service representatives at any location. If you are new to College and uncertain about what is necessary or what it's all about, please don't hesitate to ask.

The faculty and staff join me in welcoming you to Jackson College!

Kristi Hottenstein
Executive Dean for Enrollment, Student Services,

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Welcome to Jackson College

This is the 2014-2015 Jackson College catalog. This catalog contains information on the various academic programs available at the College, with course plans for a bachelor's degree, associate degrees, certificates, concentrations and skill set credentials, as well as transfer plans for students planning to continue their studies at a four-year college or university. It also includes information about career opportunities and individual course descriptions.

Information about college policies, different locations, admissions procedures, college resources and more is now available online at www.jccmi.edu

Note: The information in this printed College catalog reflects the current curricula. However, these are subject to change at any time by the action of the Board of Trustees or the administration. The most current information regarding the catalog can be found online at www.jccmi.edu.

Bachelor's Degree Options and Requirements

JC offers one bachelor's degree currently.

All bachelor's degrees will meet the Degree Outcomes (DO) requirements (see General Education Philosophy - page 8) as approved by the College Board. No course substitutions will be allowed unless considered a higher level of an approved course.

To earn a bachelor's degree, students must meet these requirements:

1. A minimum cumulative grade point average of 2.0 overall. (Some programs have additional grade and course requirements. Follow the guide sheet for your program and meet with an academic advisor for complete information.)
Important: only courses with a 2.0 or better will transfer to most four-year colleges and universities.
2. A minimum grade of 2.0 in each course that applies toward a degree.
3. Completion of specific courses in a degree.
4. A minimum of 120 credits.
5. A minimum of 30 credits earned at JC.
6. Courses identified as remedial or developmental cannot be used as credits toward degrees or certificates. As of fall 2011, developmental courses are identified with a three-digit number beginning with a 0, such as 020, 080, 095, and only courses considered to be college level (100-level or higher) can be used to fulfill degree requirements. Additional courses excluded from credits toward degrees and certificates are continuing education courses (prefix CCE, CED, CEU, CFO, CJT, CSS, ESL, LTL) and courses offered through JC's workforce training programs (prefixes JTI, PDI).
7. A completed Application for Graduation for the concentration submitted by the deadline date to Records, located in Student Services, Central Campus, or to any JC center. Students have five academic years to apply for graduation from the time they completed their last course at JC. Applications are available at all locations, or the JC web site (www.jccmi.edu/StudentServices/Registration/graduation.htm). Official audits are processed by the Registrar's Office.
8. Completion of the degree requirements from any catalog of entry issued during continuous enrollment. Students who are not continuously enrolled and have completed degree requirements must meet the requirements of the catalog in effect at the time of graduation application. Students re-entering who have not completed degree requirements must follow catalog in effect at time of their re-entry date.

9. Coursework completed within a reasonable time period. This may require repeating certain essential courses, even though a passing grade was previously earned. An essential course involves material that affects skill development and successful performance and/or contains content likely to change significantly over time, as determined by appropriate academic departments.

10. Multiple degrees may be conferred in the same graduation period.

Associate Degree Options and Requirements

JC offers four types of associate degrees. Each degree includes general education courses as well as specific program courses. Students should select an associate degree based on their plan of study or career goal.

ASSOCIATE IN ARTS (AA) ASSOCIATE IN SCIENCE (AS)

Students intending to transfer to another college or university usually select one of these degree programs. Students choose from courses that prepare them for a variety of professions and academic disciplines. **Note: students are not required to earn a degree prior to transferring but may transfer credits back to JC to complete graduation requirements.**

ASSOCIATE IN GENERAL STUDIES (AGS)

This degree is for students who want to plan their own program of study not defined by a specific job or career. The degree's flexibility allows the creation of a unique learning experience, such as combining the student's JC experience with other academic institutions or community organizations, to prepare for or create a specialized career option.

ASSOCIATE IN APPLIED SCIENCE (AAS)

This degree prepares students for entry into a technical or skilled occupational career immediately following JC.

All associate degrees will meet the Associate Degree Outcomes (ADO) requirements (see General Education Philosophy) as approved by the College Board. No course substitutions will be allowed unless considered a higher level of an approved course.

To earn an associate degree, students must meet these requirements:

1. A minimum cumulative grade point average of 2.0 overall. (Some programs have additional grade and course requirements. Follow the guide sheet for your program and meet with an academic advisor for complete information.)
Important: only courses with a 2.0 or better will transfer to most four-year colleges and universities.
2. A minimum grade of 2.0 in each course that applies toward a degree.
3. Completion of specific courses in a degree.
4. A minimum of 60 credits.
5. A minimum of 15 credits earned at JC.
6. Courses identified as remedial or developmental cannot be used as credits toward degrees or certificates. Additional courses excluded from credits toward degrees and certificates are continuing education courses (prefix CCE, CED, CEU, CFO, CJT, CSS, ESL, LTL) and courses offered through JC's workforce training programs (prefixes JTI, PDI).
7. A completed Application for Graduation for the associate degree submitted by the deadline date to Records, located in Student Services, Central Campus, or to any JC center. Students have five academic years to apply for graduation from the time they completed their last course at JC. Applications are available at all locations, or the JC web site (www.jccmi.edu/StudentServices/Registration/graduation.htm). Official audits are processed by the Registrar's Office.
8. Completion of the degree requirements from any catalog of entry issued during continuous enrollment. Students who are not continuously enrolled and have completed degree requirements must meet the requirements of the catalog in effect at the time of graduation application. Students re-entering who have not completed degree requirements must follow catalog in effect at time of their re-entry date.
9. Coursework completed within a reasonable time period. This may require repeating certain essential courses, even though a passing grade was previously earned. An essential course involves material that affects skill development and successful performance and/or contains content likely to change significantly over time, as determined by appropriate academic departments.
10. A minimum of 12 additional credits beyond those credits completed for one degree are required to earn a second associate degree.
11. Multiple degrees may be conferred in the same graduation period.

Certificate

JC offers "Certificates" that comprise 30 to 59 credits of course work. They concentrate on specific skills with fewer general education courses than an associate degree. All certificates will contain a minimum requirement of ENG 131 and MAT 131.

To earn a certificate, students must meet these requirements:

1. A minimum cumulative grade point average of 2.0 overall. (Some programs have additional grade and course requirements. Follow the guide sheet for your program and meet with an academic advisor for complete information.)
Important: only courses with a 2.0 or better will transfer to most four-year colleges and universities.
2. A minimum grade of 2.0 in each course that applies toward a degree.
3. Completion of specific courses in a degree.
4. A minimum of 30 credits.
5. A minimum of 15 credits earned at JC.
6. Courses identified as remedial or developmental cannot be used as credits toward degrees or certificates. As of fall 2011, developmental courses are identified with a three-digit number beginning with a 0, such as 020, 080, 095 and only courses considered to be college level (100-level or higher) can be used to fulfill degree requirements. Additional courses excluded from credits toward degrees and certificates are continuing education courses (prefix CCE, CED, CEU, CFO, CJT, CSS, ESL, LTL) and courses offered through JC's workforce training programs (prefixes JTI, PDI).
7. A completed Application for Graduation for the certificate submitted by the deadline date to Records, located in Student Services, Central Campus, or to any JC center. Students have five academic years to apply for graduation from the time they completed their last course at JC. Applications are available at all locations, or the JC web site (www.jccmi.edu/StudentServices/Registration/graduation.htm). Official audits are processed by the Registrar's Office.
8. Completion of the certificate requirements from any catalog of entry during continuous enrollment. Students who are not continuously enrolled and have completed certificate requirements must meet the requirements of the catalog in effect at the time of graduation application. Students re-entering who have not completed the certificate requirements must follow the catalog in effect at the time of their re-entry date.
9. Coursework completed within a reasonable time period. This may require repeating certain essential courses, even though a passing grade was previously earned. An essential course

involves material that affects skill development and successful performance and/or contains content likely to change significantly over time, as determined by appropriate academic departments.

10. A minimum of six additional hours, beyond those credits completed for one certificate, are required to earn a second certificate.
11. Multiple certificates may be conferred in the same graduation period.

Concentrations

JC offers "Concentrations" that are a coordinated set of courses whose purpose is to enable students to efficiently achieve a specific occupational goal. Each concentration will:

1. Require no fewer than 16 and no more than 29 credit hours.
2. Provide a set of skills and knowledge to benefit students within specific career areas.
3. Serve as building blocks toward certificates or associate degrees.
4. Require students to minimally show the proficiency of ENG 085, ENG 090 and MAT 020.
5. Not be eligible for federal aid (i.e. federal Pell Grants, Stafford Loans).
6. Not have academic honors denoted on transcript.
7. Not be included in commencement.

To earn a concentration, students must meet these requirements:

1. A minimum cumulative grade point average of 2.0 overall. (Some programs have additional grade and course requirements. Follow the guide sheet for your program and meet with an academic advisor for complete information.)
Important: only courses with a 2.0 or better will transfer to most four-year colleges and universities.
2. A minimum grade of 2.0 in each course that applies toward a degree.
3. Completion of specific courses in the concentration.
4. A minimum of 16 credits.
5. A minimum of 15 credits earned at JC.
6. A completed Application for Graduation for the concentration submitted by the deadline date to Records, located in Student

Services, Central Campus or to any JC center. Students have five academic years to apply for graduation from the time they completed their last course at JC. Applications are available at all locations, or the JC web site (www.jccmi.edu/StudentServices/Registration/graduation.htm). Official audits are processed by the Registrar's Office.

7. Completion of the concentration requirements from any catalog of entry during continuous enrollment. Students who are not continuously enrolled and have completed the concentration requirements must meet the requirements of the catalog in effect at the time of graduation application. Students re-entering who have not completed the concentration requirements must follow the catalog in effect at the time of their re-entry date.
8. Coursework completed within a reasonable time period. This may require repeating certain essential courses, even though a passing grade was previously earned. An essential course involves material that affects skill development and successful performance and/or contains content that is likely to significantly change over time, as determined by appropriate academic departments.
9. Multiple concentrations may be conferred in the same graduation period.

Skill Sets

JC offers "Skill Sets" that are strategically planned groupings of courses to meet the flexibility needed by external demands of employers and the existing job market. Each of these credentials will:

1. Require 15 credits or fewer.
2. Provide a set of skills and knowledge to benefit students within specific career areas.
3. Require students to minimally show the proficiency of ENG 085 and MAT 020.
4. Not be eligible for federal aid (i.e. federal Pell Grants, Stafford Loans).
5. Not have academic honors denoted on transcript.
6. Not be included in commencement.

Other sources of funding may be available.

To earn a skill set, students must meet these requirements:

1. A minimum cumulative grade point average of 2.0 overall. (Some programs have additional grade and course requirements. Follow the guide sheet for your program and meet with an academic advisor for complete information.)
Important: only courses with a 2.0 or better will transfer to most four-year colleges and universities.
2. A minimum grade of 2.0 in each course that applies toward a degree.
3. Completion of specific courses in the skill set.
4. All credits in the skill set must be earned at JC.
5. A completed Application for Graduation for the skill set submitted by the deadline date to Records, located in Student Services, Central Campus or to any JC center. Students have five academic years to apply for graduation from the time they completed their last course at JC. Applications are available at all locations, or the JC web site (www.jccmi.edu/StudentServices/Registration/graduation.htm). Official audits are processed by the Registrar's Office.
6. Completion of the skill set requirements from any catalog of entry during continuous enrollment. Students who are not continuously enrolled and have completed the skill set requirements must meet the requirements of the catalog in effect at the time of graduation application. Students re-entering who have not completed the skill set requirements must follow the catalog in effect at the time of their re-entry date.
7. Coursework completed within a reasonable time period. This may require repeating certain essential courses, even though a passing grade was previously earned. An essential course involves material that affects skill development and successful performance and/or contains content that is likely to significantly change over time, as determined by appropriate academic departments.
8. Multiple skill sets may be conferred in the same graduation period.

General Education Philosophy

A message to students from JC faculty

General education facilitates the development of an informed and educated person who recognizes and respects the diversity of communities, thinks critically and is proficient at fundamental skills. General education engages students in active learning by providing opportunities to observe, analyze and evaluate, and to apply these skills critically to problems. General education fosters the development of responsible, ethical human beings dedicated to improving their own lives and the lives of others through work, family life, social and political action, cultural awareness and service to others.

Because JC's vision includes a variety of educational, cultural and economic goals, the general education requirements involve both traditional intellectual pursuits and practical skill development. As the general education requirements are designed to ensure breadth and depth of knowledge, they are met through carefully designed programs of study. Programs of study help students meet these goals by addressing each of the skill areas identified in the Associate Degree Outcomes (ADO). Each of JC's courses are reviewed and assessment is required to be considered for ADO standards. No course substitutions will be allowed unless considered a higher level of an approved course. These are skills that the JC Board of Trustees has determined students should develop or enhance while enrolled in the College.

THE ASSOCIATE DEGREE OUTCOMES ARE:

1. Write clearly, concisely and intelligibly.
2. Speak clearly, concisely and intelligibly.
3. Demonstrate computational skills and mathematical reasoning.
4. Demonstrate scientific reasoning.
5. Understand human behavior and social systems, the principles which govern them, and their implications for the present and future.
6. Understand and appreciate aesthetic experience and artistic creativity.
7. Think critically.
8. Make responsible decisions in personal and professional contexts.
9. Work productively with others, recognizing individual contributions to group success.
10. Understand and respect the diversity and interdependence of peoples and cultures.

Substitutions and Waivers

Students who encounter hardships while pursuing a planned educational program may request consideration of alternative courses through a substitution and/or waiver process, except for ADO requirements (see specific additional consideration). Each request must be reviewed and recommended by the department chair of the course under review and approved by the academic dean and registrar. Substitution and waiver guidelines and forms are available from department chairs, advisors and the Registration and Records Office. Our Board of Trustees supports Associate Degree Outcomes (ADO 1-10) to ensure all JC students receive a well-rounded general education. ADO substitutions are limited to coursework considered a higher level of the approved courses. Approved ADOs can be found in the Associate in Art, Associate in Science and Associate in General Studies degree requirements.

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Student Assessment at JC

Assessment is a vital part of the academic life at JC. The purpose of assessment is to measure student progress in the knowledge, skills and attitudes they exhibit from their studies. Assessment is conducted during class time, at the conclusion of programs of study, and at important stages of the academic cycle on a year by year basis. Students are expected to complete a variety of assessments during their college career. These include course examinations, portfolios, attitude surveys, journals and demonstrations of skills used in occupational fields. A standardized test is administered in selected classes to measure overall student success in the achievement of basic foundational skills. Other assessments are made after students leave JC that help faculty know the long-range effects of their teaching on student employment and the success of students who transfer to other colleges and universities. Teachers identify course learning objectives and communicate them to students in their course syllabi, in classroom materials, or in teacher led discussions about course goals. Learning objectives are closely aligned with the Associate Degree Outcomes. Feedback from student performance on the learning objectives provides faculty with an assessment of the teaching and learning that occurs.

Academic Skills Requirements

The associate degree and certificate requirements at JC include proficiency in the academic skills of reading and writing. Similarly, associate degrees and most certificates include proficiency in mathematics. To ensure development of students' abilities in these skills, the College offers an academic skills development program.

The first phase of the program occurs upon entry to the College when students' competencies are assessed via ACT/SAT scores and/or college-administered placement assessments. For current ACT score levels, see our web page (www.jccmi.edu/student-services/family/course_placement.htm). Some programs may require a higher mathematics score. Students with prior successful college coursework may also be exempt. JC accepts recent course placement scores from other Michigan colleges.

Writing: All JC students seeking a degree or certificate are required to pass the college-level writing course, ENG 131: Writing Experience I or demonstrate proficiency in writing. Upon completion of the writing placement assessment, students whose results indicate a need for further development in writing must enroll in ENG 090 or ENG 091 and successfully complete the writing post-assessment before proceeding to the required college-level writing course.

Reading: All JC students obtaining a degree or certificate are required to demonstrate proficiency in reading. Upon completion of the reading placement assessment, students whose results indicate a need for further development in reading must enroll in ENG 080 or ENG 085.

Mathematics: All JC students seeking a degree or certificate are required to pass a mathematics course best suited to their program of study or demonstrate math proficiency. Upon completion of the mathematics placement assessment, students whose results indicate a need for further development in mathematics must enroll in MAT 020 and complete the course with at least a 2.0 grade.

FYS: First semester students enrolled in ENG 080, ENG 085, ENG 090, ENG 091, MAT 019, MAT 020, MAT 031, MAT 033 and/or MAT 035 must also enroll in a First Year Seminar (FYS) course. Some scholarship programs may require the completion of a FYS course.

Guidelines: ENG 080, ENG 085, ENG 090, ENG 091, ENG 101, ENG 102, ENG 109, ENG 110, MAT 019, MAT 020, MAT 031, MAT 033, and MAT 035 carry academic credit and grades earned are included in calculating the student's grade point average. The credits for these courses, however, constitute additional graduation requirements beyond the total number of credits required for an associate degree or certificate.

Associate in Arts (ARTS.AA)

Minimum credits	60
Minimum grade in all courses.....	2.0
Minimum cumulative GPA	2.0
Minimum JC credits	15

NOTE: Only courses with a 2.0 or better transfer to most four-year colleges and universities. To complete the Michigan Transfer Agreement, students must plan their courses carefully. Completion of the Associate in Arts degree does NOT guarantee the Michigan Transfer Agreement designation.

This degree is designed for students who plan to transfer to a four-year college or university to pursue a bachelor's degree. It is selected by students planning to pursue a career in such fields as business, education, psychology and social work.

GENERAL EDUCATION REQUIREMENTS

ADO 1: Write clearly, concisely and intelligibly (6 credits)

Take the following:

ENG	131	Writing Experience I
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Choose one of the following:

ENG	132	Writing Experience II
ENG	201	Advanced Composition

ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Choose one of the following:

COM	231	Communications Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Choose one of the following:

MAT	131	Intermediate Algebra
MAT	133	Introduction to Probability & Statistics
MAT	135	Finite Mathematics
MAT	139	College Algebra
MAT	141	Pre-Calculus
MAT	151	Calculus I
MAT	154	Calculus II

ADO 4: Demonstrate scientific reasoning (7-9 credits)

Choose two of the following from two different disciplines, at least one must be a laboratory science course:

Laboratory Science Courses:

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Human Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology

BIO	231	General Botany
BIO	232	General Zoology
BIO	253	Human Anatomy and Physiology I
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

Non-laboratory Science Courses:

BIO	140	Public Health and Disease
PHY	150	Concepts in Astronomy

ADO 5: Understand human behavior and social systems (8-9 credits)

Choose two or three of the following from two different disciplines to equal at least 8 credits:

ECN	231	Macroeconomics
ECN	232	Microeconomics
HIS	120	Ancient History
HIS	131	Western Civilization to 1555
HIS	132	Western Civilization 1555 to Present
HIS	231	Development of the US through the Civil War
HIS	232	Development of the US from the Civil War
HIS	235	20th Century History
PLS	141	American National Government
PSY	140	Introduction to Psychology
PSY	152	Social Psychology
PSY	245	Infancy and Childhood
PSY	251	Abnormal Psychology
PSY	290	Human Sexuality
SOC	152	Social Psychology
SOC	231	Principles of Sociology

ADO 6: Understand aesthetic experience and artistic creativity (9 credits)

Choose three of the following from two different disciplines:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement

ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)*Choose one of the following:*

HPF	160	Wellness
HPF	186	Weight Training and Wellness
HPF	277	Stress Management
HPF	283	Managing Stress and Holistic Health
PHL	236	Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success*Program courses meet this requirement***ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures (3-4 credits)***Choose one of the following:*

ANT	131	Cultural Anthropology
ENG	236	Women in Changing Society
ENG	249	African-American Literature
ENG	257	World Literature
FRN	131	French I or higher
GEO	132	World Regions
GER	131	German I or higher
HIS	125	African-American History
HUM	131	Cultural Connections
MUS	130	Music of Non-Western Cultures
PHL	243	World Religions
PLS	262	International Relations
SOC	235	Minority Groups in America
SOC	236	Women in Changing Society
SPN	131	Spanish I or higher

PROGRAM REQUIREMENTS

Additional courses** must be taken so that total degree equals 60 credits. Visit an academic advisor to obtain a guide sheet and/or to discuss requirements for your selected program of study. Students are encouraged to choose courses that transfer as equivalent credit to four-year colleges and universities. Students are responsible to verify that courses taken meet the requirements for their chosen program of study.

**** Courses identified as remedial or developmental cannot be used as credits toward degrees or certificates. These courses currently include: CIS 090, 095; ENG 080, 085, 090, 101, 102, 109, 110; MAT 019, 020, 031, 033, 035; MTH 090, 095, 098, 100, and 110; and, MTT 009.**

Additional courses excluded from credits toward degrees and certificates are continuing education courses (prefix CCE, CED, CEU, CFO, CJT, CSS, ESL, LTL) and courses offered through JC's workforce training programs (prefixes JTI, PDI).

Environmental Science – Associate in Applied Science (ENSC.AAS)

The Environmental Science Associate Degree prepares students to transfer to, or enroll in, four-year institutions as science majors. People that enter the environmental sciences can expect positions in water quality testing; ecological testing; laboratory science; natural resources and conservation; environmental engineering; renewable energy; outdoor and environmental education; environmental law, policy and regulation; environmental advocacy; international environmental science; environmental science in higher education, environmental management and administration; public relations and communications.

Minimum credits	60
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (34-36 credits)

ADO 1: Write clearly, concisely and intelligibly (6 credits)*Take the following:*

ENG	131	Writing Experience I
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And choose one of the following

ENG	132	Writing Experience II
ENG	201	Advanced Composition
ENG	232	Technical & Business Writing

ADO 2: Speak clearly, concisely and intelligibly (3 credits)*Choose one of the following:*

COM	231	Communication Fundamentals
COM	240	Interpersonal Communications

ADO 3: Demonstrate computational skills and mathematical reasoning (4-5 credits)*Choose one of the following:*

MAT	133	Statistics
MAT	141	Precalculus
MAT	151	Calculus I
MAT	154	Calculus II

ADO 4: Demonstrate scientific reasoning (4 credits)

BIO	158	Environmental Science
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ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3-4 credits)

Choose one of the following:

ECN	231	Macroeconomics
ECN	232	Microeconomics
HIS	131	Western Civilization to 1555
HIS	132	Western Civilization 1555 to Present
HIS	231	Development of the US through the Civil War
HIS	232	Development of the US from the Civil War
HIS	235	20th Century History
PLS	141	American National Government
PSY	140	Introduction to Psychology
PSY	152	Social Psychology
PSY	245	Infancy and Childhood
PSY	251	Abnormal Psychology
PSY	290	Human Sexuality
SOC	152	Social Psychology
SOC	231	Principles of Sociology

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature - 19th Century
ENG	256	American Literature - 20th Century
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically (5 credits)

BIO	258	Field Ecology
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ADO 8: Make responsible decisions in personal and professional contexts (3 credits)

Take the following:

PHL	236	Ethics
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ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement

ADO 10: Understand and respect the diversity and interdependence of peoples and cultures (3 credits)

Take one of the following

ANT	131	Cultural Anthropology
ENG	236	Women in Changing Society
ENG	249	African-American Literature
ENG	257	World Literature
FRN	131	French I or higher
GEO	132	World Regions

GER	131	German I or higher
HIS	125	African-American History
HUM	131	Cultural Connections
MUS	130	Music of Non-Western Cultures
PHL	243	World Religions
PLS	262	International Relations
SOC	235	Minority Groups in America
SOC	236	Women in Changing Society
SPN	131	Spanish I or higher

ENVIRONMENTAL SCIENCE CORE REQUIREMENTS (15-18 credits)

Choose two from the following group, depending on professional goals or transfer institution requirements:

BIO	220	Microbiology
BIO	231	General Botany
BIO	232	General Zoology
GEL	109	Earth Science
GEL	160	Introduction to Geology
GEO	131	Physical Geography

AND choose two from the following group, depending on professional goals or transfer institution requirements:

BIO	161	General Biology I
BIO	162	General Biology II
CEM	141	General Chemistry I
CEM	142	General Chemistry II
CEM	241	Organic Chemistry I
CEM	242	Organic Chemistry II
PHY	231	College Physics I
PHY	232	College Physics II
PHY	251	Modern University Physics I
PHY	252	Modern University Physics II

Options to consider before finalizing degree requirements depending on career goals;

ENVIRONMENTAL SCIENCE ELECTIVES (6-11 credits)

Choose from the following:

ALT	200	Principles of Alternative Energy
ART	103	Drawing I
ART	203	Drawing II
ART	121	Ceramics I
ART	152	Painting I: Design & Color
ART	240	Printmaking
BIO	245	Intern/Externship
BUA	121	Leadership
CIS	137	Digital Photography I OR
ART	137	Digital Photography I
CIS	237	Digital Photography II OR
ART	237	Digital Photography II
CIS	201	Advanced Information Technologies
COM	233	Argumentation & Debate

ECN	231	Macroeconomics
ECN	232	Microeconomics
EDU	100	Pre-teaching Pathway
EDU	221	Exploring Teaching
EGR	153	Engineering Drawing
EMS	110	Advanced First Aid & American Heart CPR
ENG	261	Creative Writing
MAT	251	Calculus III
PHL	232	Logic
PHL	243	World Religions
STM	101	Sustainability

Environmental Science – Certificate (*ENSC.CERT*)

The Environmental Science Certificate prepares students to transfer to, or enroll in, four-year institutions as environmental science majors. The certificate fulfills most of the first-year academic entrance requirements for science programs. Certificate graduates could also find employment as laboratory technicians. While students should verify information with their transfer institutions, these students are advised by science faculty members according to their specific program goals for the best transfer to their four-year institutions or preparation for employment.

Minimum credits	30
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC Credits	15

GENERAL EDUCATION REQUIREMENTS (10-11 credits)

ENG	131	Writing Experience
MAT	131	Intermediate Algebra or higher

Choose one of the following, depending on professional goals or transfer institution requirements:

PSY	140	Introduction to Psychology
PHL	232	Logic
ECN	231	Microeconomics
ECN	232	Macroeconomics
PLS	141	American National Government
COM	231	Communication Fundamentals
COM	240	Interpersonal Communication
GEO	131	Physical Geography
STM	101	Sustainability

ENVIRONMENTAL SCIENCE CORE REQUIREMENTS (20-21 credits)

These two courses are required of all Environmental Science Certificate students:

BIO	158	Environmental Science
BIO	258	Field Ecology

In addition, students should choose two of the following, depending on professional goals or transfer institution requirements:

GEL	109	Earth Science OR
GEL	160	Introduction to Geology
BIO	220	General Microbiology
BIO	251	General Botany OR
BIO	232	General Zoology

Choose one of the following, depending on professional goals or transfer institution requirements:

BIO	161	General Biology I
BIO	162	General Biology II
CEM	141	General Chemistry
PHY	231	College Physics

Fundamentals of Engineering – Certificate (*FUEN.CERT*)

The Fundamentals of Engineering Certificate prepares students to transfer to, or enroll in, four-year institutions as engineering majors. The certificate fulfills many of the first two years of academic requirements for engineering programs. Certificate graduates could also find employment as engineering technicians. While students should verify information with their transfer institutions, these students are advised by mathematics and engineering faculty members according to their specific program goals for the best transfer options.

Minimum credits	41
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (6 credits)

Take the following:

ENG	131	Writing Experience I
ENG	132	Writing Experience II

FUNDAMENTALS OF ENGINEERING CORE REQUIREMENTS (35 credits)

Take the following:

CPS	177	Programming in C++
CEM	141	General Chemistry I
MAT	151	Calculus I
MAT	154	Calculus II
MAT	251	Calculus III

MAT	254	Differential Equations
PHY	251	Modern University Physics I
PHY	252	Modern University Physics II

Associate in General Studies

(G.E.S.T.A.G.S.)

Minimum credits	60
Minimum grade in all courses	2.0
Minimum cumulative GPA	2.0
Minimum JC credits	15

NOTE: Only courses with a 2.0 or better transfer to most four-year colleges and universities. If students want to complete the Michigan Transfer Agreement, they need to plan their courses carefully. Completion of the Associate in General Studies degree does not guarantee the Michigan Transfer Agreement designation.

This degree is adapted to a student's needs, interests and capabilities.

ADO 1: Write clearly, concisely and intelligibly (6 credits)

ENG	131	Writing Experience I
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Choose one of the following:

ENG	132	Writing Experience II
ENG	201	Advanced Composition
ENG	232	Technical & Business Writing

ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Choose one of the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Choose one of the following:

MAT	131	Intermediate Algebra
MAT	133	Introduction to Probability and Statistics
MAT	135	Finite Mathematics
MAT	139	College Algebra
MAT	141	Precalculus
MAT	151	Calculus
MAT	154	Calculus II

ADO 4: Demonstrate scientific reasoning (7-10 credits)

Choose two of the following from two different disciplines, at least one must be a laboratory science course.

Laboratory Science Courses:

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Human Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I

BIO	162	General Biology II
BIO	220	Microbiology
BIO	231	General Botany
BIO	232	General Zoology
BIO	253	Human Anatomy and Physiology I
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

Non-laboratory Science Courses:

BIO	140	Public Health and Disease
PHY	150	Concepts in Astronomy

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (6-8 credits)

Choose two of the following:

ECN	231	Macroeconomics
ECN	232	Microeconomics
HIS	120	Ancient History
HIS	131	Western Civilization to 1555
HIS	132	Western Civilization 1555 to Present
HIS	231	Development of the US through the Civil War
HIS	232	Development of the US from the Civil War
HIS	235	20th Century History
PLS	141	American National Government
PSY	140	Introduction to Psychology
PSY	152	Social Psychology
PSY	245	Infancy and Childhood
PSY	251	Abnormal Psychology
PSY	252	Developmental Psychology
PSY	290	Human Sexuality
SOC	152	Social Psychology
SOC	231	Principles of Sociology

ADO 6: Understand aesthetic experience and artistic creativity (6 credits)

Choose two of the following from two different disciplines:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement

ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)

Choose one of the following:

HPF	160	Wellness
HPF	186	Weight Training and Wellness
HPF	277	Stress Management
HPF	283	Managing Stress and Holistic Health
PHL	236	Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures (3-4 credits)

Choose one of the following:

ANT	131	Cultural Anthropology
ENG	236	Women in Changing Society
ENG	249	African-American Literature
ENG	257	World Literature
FRN	131	French I or higher
GEO	132	World Regions
GER	131	German I or higher
HIS	125	African-American History
HUM	131	Cultural Connections
PHL	243	World Religions
PLS	262	International Relations
MUS	130	Music of Non-Western Cultures
SOC	235	Minority Groups in America
SOC	236	Women in Changing Society
SOC	246	Marriage and Family
SPN	131	Spanish I or higher

PROGRAM REQUIREMENTS

Additional courses** so that total degree equals 60 credits.

Plan to see an academic advisor to discuss requirements for your selected program of study.

****Courses identified as remedial or developmental cannot be used as credits toward degrees or certificates. These courses currently include: CIS 090, 095; ENG 080, 085, 090, 091, 101, 102, 109, 110; MAT 0190, 020, 031, 033, 035; MTH 090, 095, 098, 100, and 110; and, MTT 009**

Additional courses excluded from credits toward degrees and certificates are continuing education courses (prefix CCE, CED, CEU, CFO, CJT, CSS, ESL, LTL) and courses offered through JC's workforce training programs (prefixes JTI, PDI).

General Education – Certificate (GLED.CERT)

This 30-credit program, designed for students intending to pursue an associate degree from Jackson College, documents the completion of general education requirements. It is not intended for undecided transfer students. Undecided transfer students should complete the General Transfer Certificate.

Minimum credits	30
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS

Take the following: (7 credits)

ENG	131	Writing Experience I
MAT	131	Intermediate Algebra or higher

Choose one of the following: (3 credits)

ENG	132	Writing Experience II
ENG	232	Technical & Business Writing
ENG	201	Advanced Composition

Choose one of the following: (3 credits)

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

Choose one of the following: (1 credit)

HPF	160	Wellness
HPF	186	Weight Training and Wellness
HPF	277	Stress Management
HPF	283	Managing Stress and Holistic Health
PHL	236	Ethics

Choose one of the following: (4 credits)

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Human Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	253	Human Anatomy and Physiology I
BIO	220	Microbiology
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

Choose one of the following: (3 credits)

ECN	231	Macroeconomics
ECN	232	Microeconomics
HIS	131	Western Civilization to 1555

HIS	132	Western Civilization 1555 to Present
HIS	231	Development of the US through the Civil War
HIS	232	Development of the US from the Civil War
HIS	235	20th Century History
PLS	141	American National Government
PSY	140	Introduction to Psychology
SOC	231	Principles of Sociology

Choose one of the following: (3 credits)

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

Choose one of the following: (3 credits)

ANT	131	Cultural Anthropology
ENG	236	Women in Changing Society
ENG	249	African-American Literature
ENG	257	World Literature I
FRN	131	French I or higher
GEO	132	World Regions
GER	131	German I or higher
HIS	125	African-American History
HUM	131	Cultural Connections
PHL	243	World Religions
PLS	262	International Relations
MUS	130	Music of Non-Western Cultures
SOC	235	Minority Groups in America
SOC	236	Women in Changing Society
SPN	131	Spanish I or higher

ELECTIVES

Choose from the following courses to reach 30 credits:

ACC 211, ACC 231, ART 101, BUA 100, CIS 101, DMS 100, EMS 110, HOC 130, MOA 120

General Transfer – Certificate (GLTR.CERT)

This 30-credit certificate is designed for students undecided about their course of study. Upon completion of this certificate, students may request that "MTA Agreement Satisfied" (Michigan Transfer Agreement) be posted to their transcript.

While these courses are transferable, many universities prefer that their future students take specific courses and demonstrate competency in certain areas. Additionally, although the minimum GPA for transfer is listed as 2.0, some universities require a much higher GPA for admission into their university and almost all require a high GPA for a secondary admit program. Students should contact their transfer university and complete suggested courses and/or competencies.

Minimum credits	30
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

Take 30 credits from:

ENGLISH AND COMMUNICATIONS (2 courses)

Take the following:

ENG	131	Writing Experience I
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Plus take one additional course from the following:

ENG	132	Writing Experience II
ENG	232	Technical and Business Writing
ENG	201*	Advanced Composition
COM	231	Communication Fundamentals
COM	240	Interpersonal Communication
COM	250	Intercultural Communication

** ENG 201 Advanced Composition is a by-invitation-only English course that may be substituted for ENG 132 for this degree.*

MATHEMATICS/QUANTITATIVE REASONING (1 course)

Take one course from the following:

MAT	133	Introduction to Probability & Statistics
MAT	135	Finite Mathematics
MAT	139	College Algebra
MAT	141	Pre-Calculus
MAT	151	Calculus I
MAT	154	Calculus II
MAT	251	Calculus III
MAT	254	Differential Equations

NATURAL SCIENCE (2 courses)

*Choose two courses from the following; one must be a lab science. Courses that are not lab science are marked with an *.*

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	140*	Public Health and Disease
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	231	General Botany
BIO	232	General Zoology
BIO	253	Human Anatomy and Physiology I

BIO	254	Human Anatomy & Physiology II
CEM	131	Fundamentals of Chemistry
CEM	132	Organic & Biological Chemistry
CEM	141	General Chemistry I
CEM	142	General Chemistry II
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	150	Concepts in Astronomy
PHY	151	Astronomy
PHY	231	College Physics I
PHY	232	College Physics II
PHY	251	Modern University Physics I
PHY	252	Modern University Physics II

SOCIAL SCIENCE

Choose two courses from the following; they must be from two different disciplines

ANT	131	Cultural Anthropology
CRJ	111	Introduction to Criminal Justice
CRJ	117	Criminology
ECN	231	Macroeconomics
ECN	232	Microeconomics
GEO	131	Physical Geography
GEO	132	World Regions
HIS	231	Development of US through the Civil War
HIS	232	Development of US from the Civil War
HIS	235	20th Century History
PLS	141	American National Government
PSY	140	Introduction to Psychology
PSY	152	Social Psychology
PSY	245	Infancy and Childhood
PSY	251	Abnormal Psychology
PSY	252	Developmental Psychology
PSY	290	Human Sexuality
SOC	117	Criminology
SOC	152	Social Psychology
SOC	231	Principles of Sociology
SOC	235	Minority Groups in America
SOC	236	Women in a Changing Society
SOC	246	Marriage and Family

HUMANITIES

Choose two courses from the following; they must be from two different disciplines

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	236	Women in a Changing Society
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	249	African-American Literature
ENG	252	Shakespeare
ENG	254	Children Literature

ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
ENG	257	World Literature
FRN	131	French I
FRN	132	French II
GER	131	German I
GER	132	German II
HIS	120	Ancient History
HIS	131	Western Civilization to 1555
HIS	132	Western Civilization 1555 to Present
HUM	131	Cultural Connections
MUS	130	Music of Non-Western Cultures
MUS	131	Understanding Music
MUS	132	History of American Popular Music
MUS	151	Music Theory I
MUS	152	Music Theory II
PHL	231	Introduction to Philosophy
PHL	232	Logic
PHL	243	World Religions
SPN	131	Elementary Spanish I
SPN	132	Elementary Spanish II
SPN	231	Intermediate Spanish I
SPN	232	Intermediate Spanish II
THR	116	Introduction to Theatre

Pre-Professional Science - Certificate (PPSC.CERT)

The Pre-Professional Science Certificate prepares students to transfer to four-year institutions either as science majors or as pre-professional students (pre-vet, pre-med, pre-dental, physical and occupational therapy, optometry, pharmacy, physician's assistant, etc.). Certificate graduates could also find employment as laboratory technicians. The certificate fulfills most of the first-year academic entrance requirements for pre-professional programs. Students should verify information with their transfer institutions.

Minimum credits	30
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (10 credits)

Take the following:

ENG	131	Writing Experience I
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Choose one of the following:

MAT	141	Pre-Calculus
MAT	151	Calculus I

Choose one of the following: (Depending on professional goals or transfer institution requirements)

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication
ECN	231	Macroeconomics
ECN	232	Microeconomics
PHL	232	Logic
PLS	141	American National Government
PSY	140	Introduction to Psychology
SOC	231	Principles of Sociology

PRE-PROFESSIONAL SCIENCE CORE REQUIREMENTS (20 credits)

Choose four of the following: (Depending on professional goals or transfer institution requirements)

BIO	161	General Biology I
BIO	162	General Biology II
CEM	141	General Chemistry I
CEM	142	General Chemistry II
MAT	133	Statistics
MAT	151	Calculus I OR
MAT	154	Calculus II
PHY	231	College Physics I OR
PHY	251	Modern University Physics I

Choose one of the following: (Depending on professional goals or transfer institution requirements)

BIO	155	Human Anatomy & Physiology
BIO	231	General Botany
BIO	232	General Zoology
BIO	253	Human Anatomy and Physiology I
BIO	254	Human Anatomy and Physiology II
BIO	220	Microbiology
CEM	241	Organic Chemistry I

Associate in Science (SCIE.AS)

Minimum credits	60
Minimum grade in all courses	2.0
Minimum cumulative GPA	2.0
Minimum JC credits	15

NOTE: Only courses with a 2.0 or better transfer to most four-year colleges and universities. To complete the Michigan Transfer Agreement, students must carefully plan their courses. Completion of the Associate in Science degree does NOT guarantee the Michigan Transfer Agreement designation.

This degree is designed for students who plan to transfer to a four-year college or university to pursue a bachelor's degree. It is selected by students planning to pursue a career in engineering, medicine, health sciences and other science related professions.

GENERAL EDUCATION REQUIREMENTS

ADO 1: Write clearly, concisely and intelligibly (6 credits)

Take the following:

ENG	131	Writing Experience I
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Choose one of the following:

ENG	132	Writing Experience II
ENG	201	Advanced Composition

ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Take the following:

COM	231	Communication Fundamentals
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ADO 3: Demonstrate computational skills and mathematical reasoning (4-5 credits)

Choose one of the following:

MAT	141	Precalculus
MAT	151	Calculus
MAT	154	Calculus II

ADO 4: Demonstrate scientific reasoning (4-5 credits)

Choose one of the following:

BIO	110	Introduction to Biology
BIO	132	Human Biology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	231	General Botany
BIO	232	General Zoology
BIO	220	Microbiology
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3 credits)

Choose one of the following:

ECN	231	Macroeconomics
ECN	232	Microeconomics
HIS	120	Ancient History
HIS	131	Western Civilization to 1555
HIS	132	Western Civilization 1555 to Present
HIS	231	Development of the US through the Civil War
HIS	232	Development of the US from the Civil War
HIS	235	20th Century History
PLS	141	American National Government
PSY	140	Introduction to Psychology
SOC	231	Principles of Sociology

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)*Choose one of the following:*

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically*Program courses meet this requirement***ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)***Choose one of the following:*

HPF	160	Wellness
HPF	186	Weight Training and Wellness
HPF	277	Stress Management
HPF	283	Managing Stress and Holistic Health
PHL	236	Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success*Program courses meet this requirement***ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures (3-4 credits)***Choose one of the following:*

ANT	131	Cultural Anthropology
ENG	236	Women in Changing Society
ENG	249	African-American Literature
ENG	257	World Literature I
FRN	131	French I or higher
GEO	132	World Regions
GER	131	German I or higher
HIS	125	African-American History
HUM	131	Cultural Connections
PHL	243	World Religions
PLS	262	International Relations
MUS	130	Music of Non-Western Cultures
SOC	235	Minority Groups in America
SOC	236	Women in Changing Society
SPN	131	Spanish I or higher

NATURAL SCIENCE (16 credits)*(At least one course must be from a different discipline than taken in ADO 4.)*

BIO	110	Introductory Biology
BIO	132	Human Biology

BIO	158	Environmental Science
BIO	155	Human Anatomy & Physiology OR
BIO	253	Human Anatomy and Physiology I
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	231	General Botany
BIO	232	General Zoology
CEM	131	Fundamentals of Chemistry
CEM	132	Fundamentals of Organic and Biological Chemistry
CEM	137	Chemistry of Life
CEM	141	General Chemistry I
CEM	142	General Chemistry II
CEM	241	Organic Chemistry I
CEM	242	Organic Chemistry II
GEL	109	Earth Science
GEL	160	Introduction to Geology
MAT	151	Calculus I
MAT	154	Calculus II
MAT	251	Calculus III
MAT	254	Differential Equations
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	232	College Physics II
PHY	251	Modern University Physics I
PHY	252	Modern University Physics II

*Courses cannot be counted toward both general education and additional degree requirements.***PROGRAM REQUIREMENTS**

Additional courses** so that total degree equals 60 credits. Plan to visit an academic advisor to obtain a guide sheet and/or to discuss requirements for your selected program of study. Students are encouraged to choose courses that transfer as equivalent credit to four-year colleges and universities. Students are responsible to see that courses taken meet the requirements for their chosen program of study.

****Courses identified as remedial or developmental cannot be used as credits toward degrees or certificates. These courses currently include: CIS 090, 095; ENG 080, 085, 090, 091, 101, 102, 109, 110; MAT 019, 020, 031, 033, 035; MTH 090, 095, 098, 100, and 110; and, MTT 009. MTH 120 is also excluded from fulfilling the Associate in Science degree requirements.**

Additional courses excluded from credits toward degrees and certificates are continuing education courses (prefix CCE, CED, CEU, CFO, CJT, CSS, ESL, LTL) and courses offered through JC's workforce training programs (prefixes JTI, PDI).

Associate in Applied Science

This degree is recommended for students who plan to enter a specific occupation upon graduation from JC.

DEGREE, ELECTIVE AND RELATED REQUIREMENTS

See an academic advisor to obtain a guide sheet and to discuss requirements for your selected program of study. Degree requirements are also available on our web site.

Important Information for Transfer Students

You may be able to earn as much as half of your bachelor's degree program (freshmen and sophomore years) at JC. A bachelor's degree at most four-year colleges and universities requires 124 semester credit hours, and most colleges accept 60-64 credits from JC. Some allow students to transfer more credits but still require about 60 hours to be taken at their institution.

You can decide whether to earn an associate degree from JC before transferring. Transfer students who wish to earn a degree usually pursue an Associate in Arts or an Associate in Science. Colleges with completion or fast-track degree programs for working adults may allow students to transfer all the credits earned from an Associate in Applied Science degree. Others may accept up to 90 credits earned at JC and require an additional 30 credit hours. In other programs, it may be to the student's advantage to complete the Michigan Transfer Agreement.

Earning a degree from JC does not automatically qualify students to enter as a junior at the transfer institution. Four-year institutions reserve the right to evaluate each course completed at JC for transfer credit.

The transferability of courses depends on:

- The intended transfer college.
- The program of study, i.e., the major and/or minor(s).
- The grade received in the JC course (2.0 is minimum acceptable grade point).
- Whether the transfer college has an equivalent course.
- The level of the course (e.g. an intermediate algebra course may be acceptable for one program, but not for others that require higher levels of mathematics).

Students are encouraged to keep the syllabi and course materials (including quizzes/tests, notes from courses, and names/authors of texts) of all courses they intend to transfer. Transfer courses are formally articulated with about 20 four-year colleges and universities in Michigan and recognized by other colleges and universities throughout the United States.

TOOLS TO HELP TRANSFER STUDENTS

Each transfer institution has its own requirements for admission, majors, general education, and second admit programs. Requirements are stated in the transfer college's catalog or you can find additional information on JC's web site. General guidelines are available to help students choose courses that transfer to their preferred college. Program guide sheets are available that list JC courses that meet general education and specific program requirements at various senior institutions. Guide sheets are

available in the Student Center on JC's Central Campus, JC @ LISD TECH, Clyde LeTarte Center, Hillsdale, W.J. Maher Campus and on the web site.

Transfer Procedure - A Checklist

Review the following checklist at least a year prior to transferring; JC suggests starting in your first semester.

1. See a JC academic advisor.
2. Decide on the school to which you intend to transfer. Colleges/universities vary in requirements.
3. Decide on a program of study or major. JC academic advisors provide program guide sheets outlining which courses to take. Also, request a catalog from your intended transfer college.
4. Visit transfer colleges/universities and talk with staff and students.
5. Apply for transfer admission well in advance of the anticipated date of transfer. Applications are available from the transfer institution.
6. Request official transcripts to be mailed to each college or university you plan to attend. Transcripts are only accepted if they are mailed directly by the College and have the official seal. Request JC transcripts from the Registrar's Office.
7. Complete the appropriate financial aid application materials. Financial assistance is not awarded until the student is accepted by the institution. Request financial aid transcripts from each previous institution attended, regardless of whether or not you ever applied for financial aid from that college or university.

Special Note on Foreign Language Requirements

Some four-year colleges and universities require competency in a foreign language equivalent to two years of college study. Students transferring to an institution requiring competency in a foreign language should consider meeting this requirement before transferring.

SECOND ADMIT PROGRAMS

Some programs at four-year institutions require more than the general college admissions requirements. For instance, even though a student may be accepted by Michigan State University, he/she will need to fulfill additional requirements before being accepted into the College of Education. To find out about entry standards and application deadlines, check with the specific academic department (e.g. education, business, engineering) at the transfer institution or check their college catalog.

PRE-PROFESSIONAL PROGRAMS

Students interested in pursuing curricula such as law, medicine, dentistry and other advanced degrees may choose to enroll in pre-professional programs at JC (pre-law, premedical, pre-dental, etc.) Follow the sequence of courses recommended by the transfer institution. Entrance tests required for professional degrees – GMAT, GRE, MCAT, LSAT and others – are usually taken prior to the senior year in college. JC students should check on the availability of preparation coursework at the transfer institution.

MICHIGAN TRANSFER AGREEMENT

The Michigan Association of Collegiate Registrars and Admissions Officers (MACRAO) Articulation Agreement facilitates the transfer of students from community colleges to four-year colleges and universities in Michigan. By carefully choosing courses, students may obtain an associate degree from JC and complete the Michigan Transfer Agreement (MTA). However, students do not need to obtain a degree to earn the MTA designation. If students meet all the requirements of the agreement, they should contact the Registration and Records Office and request the MTA designation on their transcripts.

For the course names please see the General Transfer Certificate (GLTR.CERT). More information can be found at <http://www.macrao.org/Publications/MTA.asp>

Requirements of the MACRAO Articulation Agreement

- Minimum 30 credits
- Minimum grade 2.0 for each course

Note: This list reflects only current courses. The Registrar's Office maintains a historical listing of courses that are accepted as part of MTA.

Take 30 credits from:

ENGLISH COMPOSITION AND COMMUNICATIONS (2 courses, 1 of which must be Composition)

English (ENG) 131, 132, 201*, 232
Communications (COM) 231, 240, 250

**Please note: ENG 201 Advanced Composition is a by-invitation-only English course that may be substituted for ENG 132*

QUANTITATIVE REASONING (at least 1 course)

Mathematics (MAT) 133, 135, 139, 141, 151, 154, 251, 254

NATURAL SCIENCE (at least 2 courses from two disciplines; 1 must be laboratory science). Courses that are not lab science are marked with an *.

Biology (BIO) 110, 132, 140*, 158, 161, 162, 220, 231, 232, 253, 254
Chemistry (CEM) 131, 132, 141, 142
Geology (GEL) 109, 160
Natural Science (NSC) 131
Physics (PHY) 131, 150*, 151, 231, 232, 251, 252

SOCIAL SCIENCE (at least 2 courses from two disciplines)

Anthropology (ANT) 131
Criminal Justice (CRJ) 111, 117
Economics (ECN) 231, 232
Geography (GEO) 131, 132
History (HIS) 231, 232, 235
Psychology (PSY) 140, 152, 245, 251, 252, 290
Political Science (PLS) 141
Sociology (SOC) 117, 152, 231, 235, 236, 246

HUMANITIES (at least 2 courses from two disciplines)

Art (ART) 111, 112
English (ENG) 210, 236, 246, 247, 249, 252, 254, 255, 256, 257
French (FRN) 131, 132
German (GER) 131, 132
History (HIS) 120, 131, 132
Humanities (HUM) 131
Music (MUS) 130, 131, 132, 151, 152
Philosophy (PHL) 231, 232, 243
Spanish (SPN) 131, 132, 231, 232
Theatre (THR) 116





Arts and Communications Career Pathway

At JC, academic areas are organized into seven career pathways to address the variety of career and training options in related fields. Within each career pathway, students can choose between certificate and associate degree programs designed to provide skills for immediate employment or job advancement. Each career pathway also offers several transfer programs for students who plan to pursue advanced degrees at four-year colleges or universities. Based on their career goals, JC students can find a career pathway that matches their knowledge, skills and attributes. The seven career pathways are:

- Arts and Communication
- Business, Management, Marketing and Technology
- Automotive Technology, Aviation and Engineering
- Manufacturing and Industrial Technology
- Health Sciences
- Human Services
- Agriscience and Natural Resources

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ARTS AND COMMUNICATION CAREER PATHWAY

This pathway includes careers related to the humanities and the performing, visual, literary and media arts. This career path may include careers in writing, journalism, web design, foreign language, radio and television broadcasting and public relations.

DEGREES/CERTIFICATES

- Digital Photography
- Graphic Design
- Studio Art
- Video Production
- Web Design

TRANSFER PROGRAMS IN THE ARTS AND COMMUNICATION PATHWAY

The first two years of a student's college education usually consist of general education courses, introductory courses in a major and/or program of study and selected electives. Academic advisors will assist students in planning their transfer program. They can also provide transfer guide sheets indicating JC courses that meet the requirements of various programs of study at four-year colleges. Sample curricula for a few popular transfer programs are included.

- Art
- English
- History
- Music
- Theatre

Digital Photography – Certificate (*DIPH.CERT*)

The Digital Photography Certificate will provide students with the foundational skills to expand their photography portfolio and help them develop skills needed to apply to a fine arts degree program or a career in the field.

Typical job opportunities are: sports photographer, school photographer, news photographer, advertising, small business owner in photography, designer, illustrator, magazine/catalog photographer, portrait photographer or photo lab technician.

Minimum credits	31
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (10 credits)

Take the following:

COM	231	Communication Fundamentals
ENG	131	Writing Experience I
MAT	131	Intermediate Algebra or higher

DIGITAL PHOTOGRAPHY CORE REQUIREMENTS (15 credits)

Take the following:

ART	101	Two-Dimensional Design
ART	137	Digital Photography I OR
CIS	137	Digital Photography I
ART	237	Digital Photography II OR
CIS	237	Digital Photography II
CIS	134	Graphic Imaging
CIS	136	Integrated Design

ELECTIVES (6 credits)

Choose from the following:

ART	103	Drawing I: Foundations
ART	112	Art History: Renaissance to Present
ART	240	Printmaking
BUA	100	Contemporary Business
BUA	230	Principles of Marketing
ENT	101	Entrepreneurship: Creating Your Own Job

Graphic Design – Associate in Applied Science (*GRDE.AAS*)

The graphic design program prepares students for entry-level positions in design organizations. Graphic design graduates find employment in a variety of settings including the publication and printing industries, advertising and marketing organizations, and graphic design departments of corporations, government agencies and retailers.

Minimum credits	64
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	16

GENERAL EDUCATION REQUIREMENTS (24 credits)

ADO 1: Write clearly, concisely and intelligibly (6 credits)

Take the following:

ENG	131	Writing Experience I
ENG	232	Technical & Business Writing

ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Choose one of the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

MAT	131	Intermediate Algebra OR
MAT	133	Introduction to Probability & Statistics OR
MAT	135	Finite Mathematics (Preferred) OR
MAT	141	Pre-Calculus (5 CR)

ADO 4: Demonstrate scientific reasoning (4-5 credits)

Choose one of the following:

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Human Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy and Physiology I
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3-4 credits)

Choose one of the following:

ECN	231	Macroeconomics
ECN	232	Microeconomics
HIS	131	Western Civilization to 1555
HIS	132	Western Civilization 1555 to Present
HIS	231	Development of the US through the Civil War
HIS	232	Development of the US from the Civil War
HIS	235	20th Century History
PLS	141	American National Government
PSY	140	Introduction to Psychology
SOC	231	Principles of Sociology

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement.

ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)

Choose one of the following:

HPF	160	Wellness
HPF	186	Weight Training and Wellness
HPF	277	Stress Management
HPF	283	Managing Stress and Holistic Health
PHL	236	Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement.

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses, COM 231 or COM 240, meet this requirement.

GRAPHIC DESIGN RELATED REQUIREMENTS

(9 credits)

Take the following:

ART	101	Two-Dimensional Design OR
ART	103	Drawing OR
ART	152	Painting & Composition

Choose from the following (6 credits):

CIS	131	Methods in 3D Prototyping
CIS	133	Brand Identity Design
CIS	138	Image Editing Applications
CIS	137	Digital Photography I OR
ART	137	Digital Photography I
BUA	231	Advertising, Promotion & Public Relations OR
ENT	101	Entrepreneurship: Creating Your Own Job OR
BUA	122	Small Business Management

GRAPHIC DESIGN CORE REQUIREMENTS

(31 credits)

Take the following:

CIS	126	Digital Design Fundamentals
CIS	127	Introduction to Creative Software
CIS	128	Typography & Layout
CIS	132	Graphic Illustration (Adobe® Illustrator®)
CIS	134	Graphic Imaging (Adobe® Photoshop®)
CIS	136	Integrated Design I (Adobe® InDesign®)
CIS	230	Practicum in Printing
CIS	232	Integrated Design II (Adobe® InDesign®)
CIS	234	Graphic Technology Applications
CIS	245	Internship/Externship

Graphic Design – Certificate
(GRDE.CERT)

The process of graphic design uses art and technology for the visual organization of information. The intent is to connect with a specific audience to communicate or expose ideas. This program allows for an understanding of the practical application of graphic design as it exists in both digital and print environments in the industry today. Career opportunities include freelance designer, editorial/publication designer, corporate identity designer, package designer, environmental designer and type designer.

Minimum credits	35
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (7 credits)*Take the following:*

ENG	131	Writing Experience I
MAT	131	Intermediate Algebra OR
MAT	133	Introduction to Probability & Statistics OR
MAT	135	Finite Mathematics (Preferred) OR
MAT	141	Pre-Calculus OR

GRAPHIC DESIGN CORE REQUIREMENTS (25 credits)*Take the following:*

CIS	126	Digital Design Fundamentals
CIS	127	Introduction to Creative Software
CIS	128	Typography & Layout
CIS	132	Graphic Illustration (Adobe® Illustrator®)
CIS	133	Brand Identity Design
CIS	134	Graphic Imaging (Adobe® Photoshop®)
CIS	136	Integrated Design I (Adobe® InDesign®)
CIS	232	Integrated Design II (Adobe® InDesign®)
CIS	234	Graphic Technology Applications

GRAPHIC DESIGN RELATED REQUIREMENTS (3 credits)*And choose 3 credits from the following courses:*

CIS	131	Methods in 3D Prototyping
CIS	133	Brand Identity Design
CIS	138	Image Editing Applications
CIS	137	Digital Photography I OR
ART	137	Digital Photography I
BUA	231	Advertising, Promotion & Public Relations OR
ENT	101	Entrepreneurship: Creating Your Own Job OR
BUA	122	Small Business Management

**Graphic Design – Concentration (GRDE.CON)**

With a concentration in graphic design, one learns the computer skills necessary to manage digital page layout and design for growing opportunities in advertising or the corporate design field. Entry-level positions include but are not limited to; junior art director, editorial designer, package designer, information designer and print production artist.

Minimum credits	21
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

REQUIRED COURSES (21 credits)*Take the following:*

CIS	126	Digital Design Fundamentals
CIS	127	Introduction to Creative Software
CIS	128	Typography & Layout
CIS	132	Graphic Illustration (Adobe® Illustrator®)
CIS	134	Graphic Imaging (Adobe® Photoshop®)
CIS	136	Integrated Design I (Adobe® InDesign®)
CIS	232	Integrated Design II (Adobe® InDesign®)

Graphic Design – Skill Set (GRDE.SSET)

With a skill set in graphic design, students learn the minimal computer skills necessary to assist in digital page layout and design for growing opportunities in advertising or the corporate design field.

Minimum credits	12
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	12

REQUIRED COURSES (12 credits)*Take the following:*

CIS	127	Introduction to Creative Software
CIS	132	Graphic Illustration (Adobe® Illustrator®)
CIS	134	Graphic Imaging (Adobe® Photoshop®)
CIS	136	Integrated Design I (Adobe® InDesign®)

Graphic Design – Print Production – Certificate (GDPP.CERT)

This certificate allows for the practical application of graphic design as it relates to production in the print industry. Career opportunities include graphic artist, editorial/publication designer, package designer, desktop publisher and print production artist.

Minimum credits	35
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (7 credits)

Take the following:

ENG	131	Writing Experience I
MAT	131	Intermediate Algebra OR
MAT	133	Introduction to Probability & Statistics OR
MAT	135	Finite Mathematics (Preferred) OR
MAT	141	Pre-Calculus

GRAPHIC DESIGN CORE REQUIREMENTS

(24 credits)

Take the following:

CIS	127	Introduction to Creative Software
CIS	128	Typography & Layout
CIS	129	Introduction to Production
CIS	131	Methods in 3D Prototyping
CIS	132	Graphic Illustration (Adobe® Illustrator®)
CIS	133	Brand Identity Design
CIS	134	Graphic Imaging (Adobe® Photoshop®)
CIS	136	Integrated Design I (Adobe® InDesign®)
CIS	230	Practicum in Printing

GRAPHIC DESIGN RELATED REQUIREMENTS

(3-6 credits)

And choose one of the following courses:

ART	101	Two-Dimensional Design OR
ART	103	Drawing OR
ART	152	Painting & Composition
CIS	131	Methods in 3D Prototyping
CIS	133	Brand Identity Design
CIS	138	Image Editing Applications
CIS	137	Digital Photography I OR
ART	137	Digital Photography I
BUA	231	Advertising, Promotion & Public Relations OR
ENT	101	Entrepreneurship: Creating Your Own Job OR
BUA	122	Small Business Management

Multimedia Web Design – Associate in Applied Science (MUWD.AAS)

A web designer combines type, graphics, animation, sound and programming to create a complete experience for the web visitor. Web design is a cooperative process, and the designer may work with interface designers, marketing professionals, engineers and computer technicians.

Minimum credits	63
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (24 credits)

ADO 1: Write clearly, concisely and intelligibly (6 credits)

Take the following:

ENG	131	Writing Experience I
ENG	232	Technical & Business Writing

ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Choose one of the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Take the following:

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (4-5 credits)

Choose one of the following:

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy and Physiology I
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3-4 credits)

Choose one of the following:

ECN	231	Macroeconomics
ECN	232	Microeconomics
HIS	131	Western Civilization to 1555
HIS	132	Western Civilization 1555 to Present
HIS	231	Development of the US through the Civil War
HIS	232	Development of the US from the Civil War
HIS	235	20th Century History
PLS	141	American National Government
PSY	140	Introduction to Psychology
SOC	231	Principles of Sociology

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement.

ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)

Choose one of the following:

HPF	160	Wellness
HPF	186	Weight Training and Wellness
HPF	277	Stress Management
HPF	283	Managing Stress and Holistic Health
PHL	236	Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement.

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses, COM 231 or COM 240, meet this requirement.

MULTIMEDIA WEB DESIGN RELATED REQUIREMENTS (6 credits)

Choose 6 credits from the following:

BUA	122	Successful Small Business
BUA	130	Customer Service
BUA	230	Principles of Marketing
ECM	220	eBusiness: SEO/Management

MULTIMEDIA WEB DESIGN CORE (33 credits)

Take the following:

CIS	101	Introduction to Computer Systems OR
CIS	201	Advanced Information Technologies
CIS	122	Microsoft® Access® Comprehensive
CIS	132	Graphic Illustration (Adobe® Illustrator®)
CIS	134	Graphic Imaging (Adobe® Photoshop®)
CIS	136	Integrated Design I (Adobe® InDesign®)
CIS	143	HTML
CIS	147	Web Page Design I (Dreamweaver®)
CIS	158	Programming Logic
CIS	243	Web Animation (Adobe® Flash®)
CIS	244	Web Programming
CIS	246	Web Integration with Database
CIS	247	Web Page Design II (Dreamweaver®)



Multimedia Web Design – Certificate (MUWD.CERT)

This program, while leading to a certificate for multimedia/web design, prepares students for entry-level positions in design organizations. Multimedia/web design graduates find employment in a variety of settings including the publication and printing industries, advertising and marketing organizations, and graphic and web design departments of corporations, government agencies and retailers. The major focus of the program is on skills development in basic design techniques and Internet technology applications.

Minimum credits	40
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (7 credits)

Take the following:

ENG	131	Writing Experience I
MAT	131	Intermediate Algebra or higher

WEB DESIGN CORE REQUIREMENTS (33 credits)

Take the following:

CIS	101	Introduction to Computer Systems
CIS	122	Microsoft® Access® Comprehensive
CIS	132	Graphic Illustration (Adobe® Illustrator®)
CIS	134	Graphic Imaging (Adobe® Photoshop®)
CIS	136	Integrated Design I (Adobe® InDesign®)
CIS	143	HTML
CIS	147	Web Page Design I (Dreamweaver®)
CIS	158	Programming Logic
CIS	243	Web Animation (Adobe® Flash®)
CIS	244	Web Programming
CIS	246	Web Integration with Database
CIS	247	Web Page Design II (Dreamweaver®)



Studio Art – Certificate (STAR.CERT)

The Studio Art Certificate provides students with the foundational skills to expand their portfolio and helps equip them for application to fine arts degree programs or a career in the arts. The curriculum encourages individual creativity and expression while emphasizing the development of basic studio skills.

Typical job opportunities are: advertising artist, art consultant, artist, auto detailer/pin-stripper, billboard artist, calligrapher, cartoonist, CD/record cover designer, courtroom sketcher, decorator, display designer, fashion artist/designer, graphic designer, illustrator, magazine/catalog illustration, mural artist, newspaper artist, publication design and tattoo artist.

This program also consists of the foundational courses needed for an associate degree.

Minimum credits	31
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (10 credits)

Take the following:

COM	231	Communication Fundamentals
ENG	131	Writing Experience I
MAT	131	Intermediate Algebra or higher

STUDIO ART CORE REQUIREMENTS (15 credits)

Take the following:

ART	101	Two-Dimensional Design
ART	103	Drawing I: Foundations
ART	112	Art History: Renaissance to Present
ART	121	Ceramics I
ART	201	Three-Dimensional Design

ELECTIVES (6 credits)

Choose 6 credits from the following :

ART	111	Art History: Prehistoric to 1400
ART	122	Ceramics II
ART	137	Digital Photography I OR
CIS	137	Digital Photography I
ART	152	Painting I: Design & Color
ART	205	Drawing II: Figure & Composition
ART	240	Printmaking
CIS	134	Graphic Imaging

Video Production – Certificate (*VIPR.CERT*)

This program prepares students through course work and hands-on experience for work in video production. The certificate includes a range of courses designed to give students experience in basic skills and knowledge to work in digital video. Typical job opportunities are advertising, camera operator, video production, independent filmmaker, lighting technician, audio mixer, teleprompter operator, video editor and video technician. This program also consists of the foundational courses needed for an associate degree.

Minimum credits	31
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (10 credits)

Take the following:

COM	231	Communication Fundamentals
ENG	131	Writing Experience I
MAT	131	Intermediate Algebra or higher

VIDEO PRODUCTION CORE REQUIREMENTS (21 credits)

Take the following:

ENG	210	Introduction to Film
THR	131	Stagecraft I
VID	101	Video Production I
VID	120	Video Production II

Take one course from the following:

ART	103	Drawing I: Foundations
CIS	134	Graphic Imaging (Adobe® Photoshop®)

Take two courses from the following:

THR	151	Make-Up for the Stage and Video
THR	241	Lighting for Stage and Video
THR	242	Sound for Stage and Video

Transfer Programs

ART

Visual artists create art to communicate ideas, thoughts or feelings. They use a variety of methods: painting, sculpting or illustration and an assortment of materials including watercolors, acrylics, pastels, pencils, pen and ink, plaster, clay and computers. Visual artists' works may be realistic, stylized or abstract and may depict objects, people, nature or events. Sample curricula for a few popular transfer programs are included.

Admittance to a four-year college art program is highly competitive. Check with the transfer institution to determine the admittance process. During the first semester of your freshman year, check whether ART classes will transfer to meet requirements of the transfer institution. Some transfer institutions grant studio art credit ONLY upon approval of a portfolio.

SUGGESTED COURSE SEQUENCE FOR ART

First Year, Fall Semester

ART 101, ART 111, ENG 131, MAT 131 or 141*, Michigan Transfer Agreement science course

First Year, Winter Semester

ART 112, ART 201, ENG 132, Michigan Transfer Agreement science course, Michigan Transfer Agreement social science course

Second Year, Fall Semester

ART 103, ART 152, Michigan Transfer Agreement social science course, non-art Michigan Transfer Agreement humanities course

Second Year, Winter Semester

ART 203, Michigan Transfer Agreement social science course, electives

**Check mathematics requirements of transfer institution.*

DANCE

Dancers use their bodies in a variety of ways to respond to social and political realities. Creative movement, awareness of the bodies in space and time and performance experience are all excellent training for careers that demand poise and confidence. Check the transfer status of DAN classes with the university of your choice.

ENGLISH

Students who major or minor in English can find work in a variety of fields. Careers such as writing, teaching, library science, editing and publishing are directly related to specific studies in English language and literature. English is an excellent pre-law major. Many transfer institutions require that English majors have proficiency in a foreign language. The level of this proficiency varies – some require third-semester proficiency but more require fourth semester proficiency.

SUGGESTED COURSE SEQUENCE FOR ENGLISH*First Year, Fall Semester*

ENG 131, MAT 131 or MAT 141*, foreign language, Michigan Transfer Agreement science course

First Year, Winter Semester

ENG 132, ENG 246, foreign language, Michigan Transfer Agreement science course

First Year, Spring Semester

Michigan Transfer Agreement social science courses

Second Year, Fall Semester

ENG 247, ENG 255, ENG 261, foreign language

Second Year, Winter Semester

ENG 252, ENG 256, foreign language, Michigan Transfer Agreement social science course, COM 231

**Check mathematics requirements of transfer institution.*

HISTORY

History examines the lives of people and the consequences of ideas. Study of the past reveals valuable achievements as well as dreadful mistakes, and in so doing helps us meet the unexpected challenges of our own day.

SUGGESTED COURSE SEQUENCE FOR HISTORY*First Year, Fall Semester*

ENG 131, HIS 131, MAT 131 or MAT 141*, Michigan Transfer Agreement science course

First Year, Winter Semester

ENG 132, GEO 132, HIS 132, PHL 231, Michigan Transfer Agreement science course

Second Year, Fall Semester

ECN 231, HIS 231, PLS 141, electives

Second Year, Winter Semester

ECN 232, HIS 232, electives

**Check mathematics requirements of transfer institution.*

MUSIC

Many occupations include music, the most obvious being a vocalist or musical entertainer. Others include songwriting, music teacher, music therapist, conductor, music critic or music librarian. Some music majors work on the business side of the industry and become agents or store owners. Music students have access to the College's incredible performing arts complex, the George E. Potter Center. Students who qualify can study and perform with the Broadway Revue and the Community Concert Band. These provide valuable concert experiences as well as academic credit. Admittance to a four-year college music program is highly

competitive and requires an audition. It is recommended that students contact their intended transfer institution during their first year to schedule an audition time.

SUGGESTED COURSE SEQUENCE FOR MUSIC*First Year, Fall Semester*

ENG 131, MAT 131 or MAT 141*, Michigan Transfer Agreement science course, MUS 103***, MUS 151**, MUS 167****, MUS 129, MUS 190

First Year, Winter Semester

ENG 132, Michigan Transfer Agreement science course, MUS 152**, MUS 168****, MUS 129, or MUS 190

Second Year, Fall Semester

MUS 130, Michigan Transfer Agreement social science courses, non-music Michigan Transfer Agreement humanities course, MUS 129, or MUS 190

Second Year, Winter Semester

MUS 131, Michigan Transfer Agreement social science course(s), MUS 129, or MUS 190

** Check mathematics requirements of transfer institution.*

*** May need to take test at transfer institution to receive credit.*

**** Semesters required depend on amount of prior piano study.*

***** Vocalists can take MUS 123/124 instead.*

THEATRE

Theatre students have access to the College's incredible performing arts complex, the George E. Potter Center, and learn from professionally experienced faculty. Program emphasizes practical experience with requirements in studio and classroom work. Career positions can include working as an actor, director, stage manager, set designer or in other theatre-related occupations.

SUGGESTED COURSE SEQUENCE FOR THEATRE*First Year, Fall Semester*

ENG 131, MAT 131 or MAT 141*, THR 145, Michigan Transfer Agreement science course

First Year, Winter Semester

ENG 132, PSY 140, THR 146, Michigan Transfer Agreement science course

Second Year, Fall Semester

THR 116, Michigan Transfer Agreement social science and humanities courses

Second Year, Winter Semester

THR 260, Michigan Transfer Agreement social science and humanities courses, electives

** Check mathematics requirements of transfer institution.*



Business, Management, Marketing and Technology Career Pathway

This pathway includes careers related to all aspects of business including accounting, business administration, finance, information processing and marketing. These may include advertising, entrepreneurship, sales, computer/information systems, human resources, office administration, economics, management and retailing.

DEGREES/CERTIFICATES:

- Accounting
- Administrative Assistant
- Business Administration
- Computer Programming Specialist
- Computer Support Specialist
- Executive Assistant
- Management
- Marketing
- Microsoft Office® User Specialist
- Networking Specialist

TRANSFER PROGRAMS

The first two years of a student's college education usually consists of general education courses, introductory courses in a major and/or program of study and selected electives. See an academic advisor for a transfer guide sheet to the college/university of your choice. The guide sheet identifies JC courses that transfer in your program of study.

Jackson College has published this catalog for information purposes only and its contents do not constitute a contract between this institution and prospective or enrolled students. The information contained in this general College catalog reflects the current curricula, policies and regulations of the College. However, these are subject to change at any time by action of the Board of Trustees or the administration. The information is generally believed to be accurate, but the College disclaims liability for inadvertent errors or omissions.

Accounting – Associate in Applied Science (ACCT.AAS)

Accountants and auditors prepare, analyze and verify financial reports and taxes and monitor information systems that furnish this information to managers in business, industry and government.

The accounting/finance major prepares students for initial employment and develops competencies for those already in the field. Students develop skills in the posting and recording of financial data, use of computers, preparation of financial statements and reports, interpretation of financial information, and develop effective supervisory and communicative techniques and skills.

Typical job opportunities and places of employment are: junior accountant with public accounting firms, banks and other financial institutions, educational institutions and other profit and not-for-profit organizations.

Minimum credits	60
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (23 credits)

ADO 1: Write clearly, concisely and intelligibly (6 credits)

Take the following:

ENG	131	Writing Experience I
ENG	232	Technical & Business Writing

ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Choose one of the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Choose one of the following:

MAT	131	Intermediate Algebra
MAT	133	Introduction to Probability & Statistics
MAT	135	Finite Mathematics

ADO 4: Demonstrate scientific reasoning (4-5 credits)

Choose one of the following:

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Human Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy and Physiology I
CEM	131	Fundamentals of Chemistry

CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them and their implications for the present and future (3 credits)

Choose one of the following:

ECN	231	Macroeconomics
ECN	232	Microeconomics

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement.

ADO 8: Make responsible decisions in personal and professional contexts

Program courses, BUA 220 or BUA 250, meet this requirement.

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement.

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures (3 credits)

Program courses, COM 231 or COM 240, meet this requirement.

ACCOUNTING RELATED REQUIREMENTS (10 credits)

Take the following:

BUA	100	Contemporary Business
BUA	110	Introduction to Wall Street
BUA	220	Principles of Management
BUA	250	Business Law I

ACCOUNTING CORE REQUIREMENTS (23 credits)

Take the following:

ACC	115	Payroll Accounting
ACC	214	Income Tax Accounting OR
ACC	122	Volunteer Income Tax Project
ACC	130	QuickBooks Pro OR
CIS	121	Microsoft® Excel®
ACC	231	Principles of Accounting
ACC	232	Principles of Accounting II
ACC	234	Managerial Accounting
ACC	240	Intermediate Accounting

ACCOUNTING ELECTIVES

Select electives from courses in ACC, BUA, CIS, ECM, ECN or ENT, if necessary to meet 60 credits required for this degree.

Please note: ACC courses are not available at all JC sites every semester. Please consult with an academic advisor.

Online note: Some students find online ACC courses to be challenging. It is recommended that online accounting students have strong computer skills including proficiency using e-mail, the Internet, experience using Microsoft® Word®, Excel® and skills with attaching files.

Accounting – Certificate**(ACCT.CERT)**

This program prepares students for bookkeeping and related occupations. Job opportunities exist for audit clerks, general accounting clerks, credit card clerks in hotels and restaurants, general ledger bookkeepers and many more. Learn to keep accounting records and compile reports using computers and calculators; prepare payrolls, tax reports; compute, type, and mail monthly statements, keep general ledgers, and perform many other accounting functions.

Minimum credits	30
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (10 credits)

Take the following:

ENG	131	Writing Experience I
ENG	232	Technical & Business Writing

Choose one of the following:

MAT	131	Intermediate Algebra
MAT	133	Introduction to Probability & Statistics
MAT	135	Finite Mathematics

ACCOUNTING CORE REQUIREMENTS (14 credits)

Take the following:

ACC	115	Payroll Accounting
ACC	231	Principles of Accounting I
ACC	232	Principles of Accounting II
BUA	110	Introduction to Wall Street
CIS	121	Microsoft® Excel® Comprehensive OR
ACC	130	QuickBooks® Pro

ELECTIVES

Select electives from courses in ACC, BUA or ECN, if necessary to meet 30 credits required for the certificate.

Please note: ACC courses are not available at all JC sites every semester. Please consult with an academic advisor.

Online note: Some students find online ACC courses to be challenging. It is recommended that online accounting students have strong computer skills including proficiency using e-mail, the Internet, experience using Microsoft® Word®, Excel® and skills with attaching files.

Administrative Assistant – Associate in Applied Science**(ADAS.AAS)**

This degree provides a solid foundation for students seeking higher-level support positions in office settings where increased responsibilities require technical skills in business communications, interpersonal relations, desktop publishing, presentation software, accounting and database software. Office and support staff personnel are in great demand everywhere today. Employment opportunities for secretaries and administrative assistants are expected to grow through the year 2018. Students completing this program could be hired for above entry level positions such as office information assistants, office systems supervisors, administrative office systems assistants, administrative secretaries and executive assistants.

Minimum credits	63
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (24 credits)**ADO 1: Write clearly, concisely and intelligibly (6 credits)**

Take the following:

ENG	131	Writing Experience I
ENG	232	Technical & Business Writing OR
ENG	132	Writing Experience II

ADO 2: Speak clearly, concisely and intelligibly (3 credits)*Choose one of the following:*

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)*Take the following:*

MAT	131	Intermediate Algebra OR
MAT	133	Introduction to Probability & Statistics OR
MAT	135	Finite Mathematics (preferred) OR
MAT	141	Pre-Calculus OR
MAT	151	Calculus I

ADO 4: Demonstrate scientific reasoning (4-5 credits)*Choose one of the following:*

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy and Physiology I
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3 credits)*Choose one of the following:*

ECN	231	Macroeconomics
ECN	232	Microeconomics
PLS	141	American National Government
PSY	140	Introduction to Psychology
SOC	231	Principles of Sociology

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)*Choose one of the following:*

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century

ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically*Program courses meet this requirement.***ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)***Choose one of the following:*

HPF	160	Wellness
HPF	277	Stress Management
HPF	283	Managing Stress and Holistic Health
PHL	236	Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success*Program courses meet this requirement.***ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures***Program courses, COM 231 or COM 240, meet this requirement.***ADMINISTRATIVE ASSISTANT RELATED REQUIREMENTS (7 credits)***Take the following:*

ACC	216	Financial Accounting Concepts OR
ACC	231	Principles of Accounting I
BUA	130	Customer Service

ADMINISTRATIVE ASSISTANT CORE REQUIREMENTS (31 credits)*Take the following:*

CIS	201	Advanced Information Technologies
CIS	110	Beginning Keyboarding/Typing
CIS	111	Intermediate Keyboarding/Typing
CIS	117	Microsoft® Outlook® Workshop
CIS	118	Microsoft® Publisher® Windows®
CIS	119	Microsoft® PowerPoint®
CIS	120	Microsoft® Word® Comprehensive
CIS	121	Microsoft® Excel® Comprehensive
CIS	122	Microsoft® Access® Comprehensive
CIS	147	Web Page Design I (Dreamweaver®) OR
CIS	125	Microsoft® Expression Web®
CIS	210	Office Administration Systems
CIS	245	Internship/Externship

Business Administration – Associate in Applied Science

(BUAD.AAS)

This is a broad-based program of business studies. This program allows the student to customize a program of study that meets the specific employment and/or transfer needs of the student.

Minimum credits	60
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (20 credits)

ADO 1: Write clearly, concisely and intelligibly (3 credits)

Take the following:

ENG	131	Writing Experience I
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ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Choose one of the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Take the following:

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (4-5 credits)

Choose one of the following:

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy and Physiology I
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them and their implications for the present and future (3 credits)

Choose one of the following:

ECN	231	Macroeconomics
ECN	232	Microeconomics

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement.

ADO 8: Make responsible decisions in personal and professional contexts

Program courses, BUA 220 or BUA 250, meet this requirement.

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement.

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program course, COM 231 or COM 240 or BUA 100, meet this requirement.

BUSINESS ADMINISTRATION RELATED REQUIREMENTS (10 credits)

Take the following:

ACC	231	Principles of Accounting I OR
ACC	216	Financial Accounting Concepts
CIS	101	Introduction to Computer Systems OR
CIS	201	Advanced Information Technologies
ENG	232	Technical & Business Writing

BUSINESS ADMINISTRATION CORE REQUIREMENTS (12 credits)

Take the following:

BUA	100	Contemporary Business
BUA	220	Principles of Management
BUA	230	Principles of Marketing
BUA	250	Business Law I

BUSINESS ADMINISTRATION ELECTIVES (18 credits)

Select electives from the following list to meet the 60-credit degree requirement.

ACC	115	Payroll Accounting
ACC	122	Volunteer Income Tax Project
ACC	214	Income Tax Accounting
ACC	216	Financial Accounting Concepts
ACC	231	Principles of Accounting I
ACC	232	Principles of Accounting II
ACC	234	Managerial Accounting
ACC	240	Intermediate Accounting
BUA	110	Introduction to Wall Street
BUA	111	Personal Finance
BUA	120	Human Relations in Business
BUA	121	Leadership
BUA	122	Successful Small Business
BUA	130	Customer Service
BUA	131	Effective Selling
BUA	221	Human Resource Management
BUA	231	Advertising, Promotion & Public Relations
BUA	245	Internship/Externship
BUA	251	Business Law II
ECN	231	Macroeconomics
ECN	232	Microeconomics
ENT	101	Entrepreneurship: Creating Your Own Job
ENT	102	Entrepreneurial Marketing: Finding Your Niche
ENT	169	Business Plan
PSY	140	Introduction to Psychology

Please note: BUA courses are not available at all JC sites every semester. Please consult with an advisor.

Business Administration – Certificate (BUAD.CERT)

The Business Administration Certificate will develop your awareness in all of the functional aspects of the business world. You can use your ability to get along with people, develop your leadership potential, and use your oral and written communication skills. Jobs may be found in insurance companies, hospitals, health-care facilities, educational institutions, transportation/distribution centers, government agencies and manufacturing firms in a variety of departments. This program also consists of the foundational courses needed for an associate degree.

Minimum credits	30
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (10 credits)

Take the following:

ENG	131	Writing Experience I
ENG	232	Technical & Business Writing
MAT	131	Intermediate Algebra or higher

BUSINESS ADMINISTRATION RELATED REQUIREMENTS (7 credits)

Take the following:

ACC	231	Principles of Accounting I OR
ACC	216	Financial Accounting Concepts
CIS	101	Introduction to Computer Systems OR
CIS	201	Advanced Information Technologies

BUSINESS CORE REQUIREMENTS (12 credits)

Take the following:

BUA	100	Contemporary Business
BUA	220	Principles of Management
BUA	230	Principles of Marketing
BUA	250	Business Law I

ELECTIVES

Select electives from courses in ACC, BUA, ECN and ENT in order to meet 30 credits required for certificate.

Please note: BUA courses are not available at all JC sites every semester. Please consult with an advisor.

Computer Programming Specialist – Associate in Applied Science (CPSP.AAS)

Programmers write the detailed sets of instructions computers understand and act on. Emphasis is placed on computer information systems, programming language, concepts and designs, logic and theory. Job opportunities may include applications programmer, computer operator, information office systems manager, operations scheduler, systems analyst or programmer.

Minimum credits	65
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (20 credits)

ADO 1: Write clearly, concisely and intelligibly (3 credits)

Take the following:

ENG	131	Writing Experience I
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ADO 2: Speak clearly, concisely and intelligibly (3 credits)*Choose one of the following:*

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)*Take the following:*

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (4-5 credits)*Choose one of the following:*

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy and Physiology I
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3-4 credits)*Choose one of the following:*

ECN	231	Macroeconomics
ECN	232	Microeconomics
HIS	131	Western Civilization to 1555
HIS	132	Western Civilization 1555 to Present
HIS	231	Development of the US through the Civil War
HIS	232	Development of the US from the Civil War
HIS	235	20th Century History
PLS	141	American National Government
PSY	140	Introduction to Psychology
SOC	231	Principles of Sociology

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)*Choose one of the following:*

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story and Novel
ENG	247	Poetry and Drama
ENG	252	Shakespeare
ENG	254	Children's Literature

ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically*Program courses meet this requirement.***ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)***Choose one of the following:*

HPF	160	Wellness
HPF	186	Weight Training and Wellness
HPF	277	Stress Management
HPF	283	Managing Stress and Holistic Health
PHL	236	Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success*Program courses meet this requirement.***ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures***Program courses, BUA 100 or COM 231 or COM 240, meet this requirement.***COMPUTER PROGRAMMING SPECIALIST RELATED REQUIREMENTS (10 credits)***Take the following:*

ACC	216	Financial Accounting Concepts
BUA	100	Contemporary Business
BUA	120	Human Relations in Business

COMPUTER PROGRAMMING SPECIALIST CORE REQUIREMENTS (35 credits)*Take the following:*

CIS	101	Introduction to Computer Systems
CIS	105	Microsoft® Windows® Workshop
CIS	106	Operating Systems: UNIX
CIS	107	Microsoft® DOS® Workshop
CIS	122	Microsoft® Access® Comprehensive
CIS	143	HTML
CIS	158	Programming Logic
CIS	160	Programming in Visual Basic.NET
CIS	165	JAVA Programming
CIS	170	Programming in C++
CIS	174	PC Repair/A+ Hardware Component OR
CNS	101	Network+/Networking Fundamentals
CIS	244	Web Programming
CIS	260	Advanced Visual Basic.NET
CIS	273	Systems Concepts and Design

Computer Programming Specialist – Certificate

(CPSP.CERT)

Job opportunities with a certificate in Computer Programming Specialist may include an entry-level position as a computer operator, application specialist, system support or website developer.

Minimum credits	42
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (7 credits)

Take the following:

ENG	131	Writing Experience I
MAT	131	Intermediate Algebra or higher

COMPUTER PROGRAMMING SPECIALIST CORE REQUIREMENTS (35 credits)

Take the following:

CIS	101	Introduction to Computer Systems
CIS	105	Microsoft® Windows® Workshop
CIS	106	Operating Systems: UNIX
CIS	107	Microsoft® DOS® Workshop
CIS	122	Microsoft® Access® Comprehensive
CIS	143	HTML
CIS	158	Programming Logic
CIS	160	Programming in Visual Basic.NET
CIS	165	JAVA Programming
CIS	170	Programming in C++
CIS	174	PC Repair/A+ Hardware Component OR
CNS	101	Network+/Networking Fundamentals
CIS	244	Web Programming
CIS	260	Advanced Visual Basic.NET
CIS	273	System Concepts and Design

Computer Service Technician (A+/Network+) – Skill Set

(CPST.SSET)

The computer service technician credential prepares students to work as a computer service professional. A+/Network+ is the recognized industry standard for computer service technicians. This training is the “journeyman’s card” for professionals in microcomputer maintenance. The computer service technician validates technical competency in networking administration

and support. Those holding A+/Network+ should demonstrate critical knowledge of media and topologies, protocols and standards, network implementation and network support. CompTIA (Computing Technology Industry Association) is the certifying agent, a non-profit industry group which determines competencies. CompTIA assures the quality of those who successfully pass the A+ and Network+ Certification exams. JC provides this program to prepare students to pass both exams. The exam is administered by CompTIA’s agents.

Minimum credits	15
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

REQUIRED COURSES (15 credits)

Take the following:

CIS	101	Introduction to Computer Systems
CIS	174	PC Repair/A+ Hardware Component
CIS	175	PC Repair/A+ Software Component
CIS	176	A+ Certification Exam Preparation
CIS	179	Network+ Certification Exam Preparation
CNS	101	Network+/Networking Fundamental Component

Computer Support Specialist – Associate in Applied Science

(CSST.AAS)

Students completing this program are prepared to assume a variety of positions in a computerized office setting. The program recognizes the increasingly important role of the personal computer in modern business and is designed to assist students in developing skills in the use of personal computer applications. Depending upon the curriculum students choose, career choices may include computer support specialist, computer applications specialist, information office manager, end-user support technician, information systems associate, personal computer (PC) coordinator, or software specialist.

Minimum credits	61
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	16

GENERAL EDUCATION REQUIREMENTS (21 credits)

ADO 1: Write clearly, concisely and intelligibly (3 credits)

Take the following:

ENG	131	Writing Experience I
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ADO 2: Speak clearly, concisely and intelligibly (3 credits)*Choose one of the following:*

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)*Take one of the following:*

MAT	131	Intermediate Algebra OR
MAT	133	Introduction to Probability & Statistics OR
MAT	135	Finite Mathematics (Preferred) OR
MAT	141	Pre-Calculus OR
MAT	151	Calculus I

ADO 4: Demonstrate scientific reasoning (4-5 credits)*Choose one of the following:*

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy and Physiology I
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3 credits)*Choose one of the following:*

ECN	231	Macroeconomics
ECN	232	Microeconomics
PLS	141	American National Government
PSY	140	Introduction to Psychology
SOC	231	Principles of Sociology

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)*Choose one of the following:*

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century

ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically*Program courses meet this requirement.***ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)***Choose one of the following:*

HPF	160	Wellness
HPF	186	Weight Training and Wellness
HPF	277	Stress Management
HPF	283	Managing Stress and Holistic Health
PHL	236	Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success*Program courses meet this requirement.***ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures***Program courses, COM 231 or COM 240, meet this requirement.***COMPUTER SUPPORT SPECIALIST RELATED REQUIREMENTS (3 credits)***Take the following:*

BUA	130	Customer Service
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COMPUTER SUPPORT SPECIALIST CORE REQUIREMENTS (37 credits)*Take the following:*

CIS	201	Advanced Computer Technologies
CIS	105	Microsoft® Windows® Workshop
CIS	106	Operating Systems: UNIX®
CIS	107	Microsoft® DOS® Workshop
CIS	118	Microsoft® Publisher® Windows®
CIS	119	Microsoft® PowerPoint®
CIS	120	Microsoft® Word® Comprehensive
CIS	121	Microsoft® Excel® Comprehensive
CIS	122	Microsoft® Access® Comprehensive
CIS	147	Web Page Design I (Dreamweaver®) OR
CIS	125	Microsoft® Expression Web®
CIS	158	Programming Logic
CIS	174	PC Repair/A+ Hardware Component
CIS	175	PC Repair/A+ Software Component
CIS	210	Office Administration Systems
CNS	101	Network+/Networking Fundamentals

Computer Support Specialist – Certificate (*CSST.CERT*)

Students completing this certificate are prepared to assume a variety of positions in a computerized office setting. The certificate contains most of the core computer classes in the Computer Support Specialist Associate Degree. Students completing this certificate may find jobs as a computer support specialist, computer applications specialist, information office manager, end-user support technician, information systems associate, personal computer (PC) coordinator, or software specialist. Students can also continue on for the associate degree or may complete this certificate to improve current job skills.

Minimum credits	37
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (7 credits)

Take the following:

ENG 131 Writing Experience I and

Choose one of the following:

MAT 131	Intermediate Algebra OR
MAT 133	Introduction to Probability & Statistics OR
MAT 135	Finite Mathematics (Preferred) OR
MAT 141	Pre-Calculus OR
MAT 151	Calculus I

COMPUTER SUPPORT SPECIALIST CORE REQUIREMENTS (30 credits)

Take the following:

CIS 201	Advanced Information Technologies
CIS 105	Microsoft® Windows® Workshop
CIS 106	Operating System: UNIX
CIS 107	Microsoft® DOS® Workshop
CIS 118	Microsoft® Publisher® Windows®
CIS 119	Microsoft® PowerPoint®
CIS 120	Microsoft® Word® Comprehensive
CIS 121	Microsoft® Excel® Comprehensive
CIS 122	Microsoft® Access® Comprehensive
CIS 147	Web Page Design I (Dreamweaver®) OR
CIS 125	Microsoft® Expression Web®
CIS 174	PC Repair/A+ Hardware Component
CIS 175	PC Repair/A+ Software Component
CIS 210	Office Administration Systems

Culinary Arts & Hospitality Management – Associate in Applied Science (*CUAR.AAS*)

This program prepares students for a career as a professional culinarian in a restaurant, hospitality or institutional setting. Culinary arts professionals have a variety of responsibilities that may include supervising and coordinating the activities of food service workers or dining room employees, planning menus, estimating daily or weekly needs, ordering and maintaining inventories of supplies and equipment, and keeping records of meals served. The program also provides a foundation for continued culinary arts studies at a four-year college, the chef certification through the American Culinary Federation (ACF) as well as the NRAEF ManageFirst and the ServSafe National Certification.

Minimum credits	72
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (17 credits)

ADO 1: Write clearly, concisely and intelligibly (3 credits)

Take the following:

ENG 131 Writing Experience

ADO 2: Speak clearly, concisely and intelligibly

Program course, CUL 227, meets this requirement.

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Take the following:

MAT 131 Intermediate Algebra or higher

ADO 4: Demonstrate scientific reasoning (4-5 credits)

Choose one of the following:

BIO 110	Introductory Biology
BIO 132	Human Biology
BIO 155	Anatomy and Physiology
BIO 158	Environmental Science
BIO 161	General Biology I
BIO 162	General Biology II
BIO 220	Microbiology
BIO 253	Human Anatomy and Physiology I
CEM 131	Fundamentals of Chemistry
CEM 141	General Chemistry I
GEL 109	Earth Science
GEL 160	Introduction to Geology
NSC 131	Contemporary Science
PHY 131	Conceptual Physics
PHY 151	Astronomy
PHY 231	College Physics I
PHY 251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3-4 credits)

Choose one of the following:

ECN	231	Macroeconomics
ECN	232	Microeconomics
PLS	141	American National Government
PSY	140	Introduction to Psychology
SOC	231	Principles of Sociology

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story and Novel
ENG	247	Poetry and Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement.

ADO 8: Make responsible decisions in personal and professional contexts

Program courses, CUL 118 or CUL 150, meet this requirement.

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement.

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses meet this requirement.

**CULINARY ARTS AND HOSPITALITY
MANAGEMENT RELATED REQUIREMENTS**

(13-14 credits)

Take the following:

CIS	101	Computer Information Systems OR
CIS	201	Advanced Information Technologies
ENT	101	Entrepreneurship: Creating Your Own Job
ACC	216	Financial Accounting Concepts

Choose one of the following:

ACC	231	Principles of Accounting I
ACC	232	Principles of Accounting II
ACC	234	Managerial Accounting
ACC	240	Intermediate Accounting

BUA	100	Contemporary Business
BUA	120	Human Relations in Business
BUA	121	Leadership
BUA	122	Successful Small Business
BUA	130	Customer Service
BUA	131	Effective Selling
BUA	220	Principles of Management
BUA	221	Human Resource Management
BUA	230	Principles of Marketing
BUA	231	Advertising, Promotion, & Public Relations
BUA	245	Internship/Externship
BUA	250	Business Law I
BUA	251	Business Law II

**CULINARY ARTS AND HOSPITALITY
MANAGEMENT CORE REQUIREMENTS (42 credits)**

Take the following:

CUL	100	Introduction to Hospitality
CUL	111	Food Handling & Alcohol Service
CUL	114	Baking I
CUL	115	Baking and Pastry II
CUL	118	Nutrition for Food Service and Culinary Professionals
CUL	120	Culinary Skills
CUL	121	Introduction to Food Production Techniques
CUL	150	Food Service Management
CUL	175	International Cuisine
CUL	224	Food and Beverage Cost Control
CUL	231	À la Carte Kitchen
CUL	250	Principles of Beverage Service

Choose two of the following:

CUL	210	Garde Manger
CUL	227	Contemporary Cuisine
CUL	228	Food Service Layout and Design
CUL	230	Quantity Food Production

Culinary Arts – Certificate
(CUAR.CERT)

Culinary arts professionals have a variety of responsibilities that may include supervising and coordinating the activities of food service workers or dining room employees, planning menus, estimating daily or weekly needs, ordering and maintaining inventories of supplies and equipment, and keeping records of meals served. The certificate will prepare students for entry-level employment in areas of cooking, baking or food service management.

Minimum credits	37
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (7 credits)

ENG	131	Writing Experience
MAT	131	Intermediate Algebra or higher

CULINARY ARTS RELATED REQUIREMENTS**(3 credits)***Take the following:*

CIS	101	Computer Information Systems OR
CIS	201	Advanced Information Technologies

CULINARY ARTS CORE REQUIREMENTS (27 credits)*Take the following:*

CUL	100	Introduction to Hospitality Management
CUL	111	Food Handling & Alcohol Service
CUL	114	Baking I
CUL	115	Baking and Pastry II
CUL	120	Introduction to Culinary Skills
CUL	121	Introduction to Food Preparation Techniques

Choose two from the following:

CUL	210	Garde Manger
CUL	227	Contemporary Cuisine
CUL	228	Food Service Layout & Design
CUL	230	Quantity Food Production

Culinary Arts – Concentration (CUAR.CON)

The rapidly growing hospitality industry offers various management careers in food and beverage, hotel and culinary arts. A balance of classroom, laboratory, and work experience opportunities combine in this program to provide management preparation for this challenging industry. The culinary arts concentration is primarily designed to prepare students for entry-level positions as chefs.

Minimum credits	18
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

REQUIRED COURSES (18 credits)*Take the following:*

CUL	100	Introduction to Hospitality
CUL	111	Food Handling & Alcohol Service
CUL	114	Baking I
CUL	115	Baking and Pastry II
CUL	120	Culinary Skills
CUL	121	Introduction to Food Production Techniques

Culinary Arts – Skill Set

(CUAR.SSET)

Provides hands-on training in hot and cold cooking, culinary skills, sanitation, purchasing, professional baking and cost controls. The culinary arts skill set prepares students for entry-level positions in the food service industry. The 12-credit-hour program includes classes in sanitation and safety, introduction to hospitality, culinary skills and baking.

Minimum credits	12
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	12

REQUIRED COURSES (12 credits)*Take the following:*

CUL	100	Introduction to Hospitality
CUL	111	Food Handling & Alcohol Service
CUL	114	Baking I
CUL	120	Culinary Skills

Cyber Security – Associate in Applied Science (CYSE.AAS)

People involved with cyber security ensure that an organization's computer networks, computer systems, and digital information stays safe from cyber attacks. Their responsibilities are continuously expanding as our society and economy relies more and more on our digital assets. This program provides the foundations of cyber security, an emphasis on the methods attackers use to infiltrate computer systems, and the means to mitigate or defeat these attacks. The courses in this program help prepare the student for a variety of industry and vendor certifications. For more information about specific certifications speak with the instructors.

Minimum credits	66
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (23 credits)**ADO 1: Write clearly, concisely and intelligibly (3 credits)***Take the following:*

ENG	131	Writing Experience
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ADO 2: Speak clearly, concisely and intelligibly (3 credits)*Choose one of the following:*

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)*Take the following:*

MAT 131 Intermediate Algebra or higher

ADO 4: Demonstrate scientific reasoning (4-5 credits)*Choose one of the following:*

BIO 110 Introductory Biology
 BIO 132 Human Biology
 BIO 155 Human Anatomy & Physiology I
 BIO 158 Environmental Science
 BIO 161 General Biology I
 BIO 162 General Biology II
 BIO 220 Microbiology
 BIO 253 Human Anatomy and Physiology I
 CEM 131 Fundamentals of Chemistry
 CEM 141 General Chemistry I
 GEL 109 Earth Science
 GEL 160 Introduction to Geology
 NSC 131 Contemporary Science
 PHY 131 Conceptual Physics
 PHY 151 Astronomy
 PHY 231 College Physics I
 PHY 251 Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3-4 credits)*Choose one of the following:*

ECN 231 Macroeconomics
 ECN 232 Microeconomics
 HIS 131 Western Civilization to 1555
 HIS 132 Western Civilization 1555 to Present
 HIS 231 Development of the US through the Civil War
 HIS 232 Development of the US from the Civil War
 HIS 235 20th Century History
 PLS 141 American National Government
 PSY 140 Introduction to Psychology
 SOC 231 Principles of Sociology

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)*Choose one of the following:*

ART 111 Art History: Prehistoric to 1400
 ART 112 Art History: Renaissance to Present
 ENG 210 Introduction to Film
 ENG 246 Short Story & Novel
 ENG 247 Poetry & Drama
 ENG 254 Shakespeare
 ENG 254 Children's Literature
 ENG 255 American Literature - 19th Century
 ENG 256 American Literature - 20th Century
 HUM 131 Cultural Connections
 MUS 131 Understanding Music
 THR 116 Introduction to Theatre
 THR 145 Fundamentals of Acting

ADO 7: Think Critically*Program courses meet this requirement:***ADO 8: Make responsible decisions in personal and professional contexts (3 credits)***Take the following:*

PHL 236 Ethics

ADO9: Work productively with others, recognizing individual contributions to group success*Program courses meet this requirement.***ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures***Program courses, COM 231 or COM 240, meet this requirement.***NETWORKING CORE REQUIREMENTS (28 credits)***Take the following:*

CNS 101 Network Fundamentals/Network+
 CNS 102 Routing Protocols and Concepts
 CNS 103 LAN Switching and Wireless
 CNS 104 Accessing the WAN
 CNS 121 Microsoft Networking Client I
 CNS 123 Microsoft Networking Server I
 CNS 131 Linux Administration I
 CNS 201 Network Security/Security+
 CNS 231 Firewalls and Intrusion Detection

CYBER SECURITY REQUIREMENTS (12 Credits)*Take the following:*

CNS 221 Securing Microsoft Networks
 CNS 233 Hacker Techniques and Incident Handling
 CNS 234 Ethical Hacking and Penetration Testing
 CNS 235 Packet Analysis and Network Forensics

COMPUTER NETWORK AND SECURITY ELECTIVE (3 credits)*Take 3 credits from the following:*

CIS 158 Programming Logic
 CIS 160 Programming in Visual Basic.NET
 CIS 165 JAVA Programming
 CIS 170 Programming in C++
 CIS 174 PC Repair/A+ Hardware Components
 CIS 175 PC Repair/A+ Software Components
 CNS 122 Microsoft Networking Client II
 CNS 123 Microsoft Networking Server II
 CNS 125 Microsoft Directory Service
 CNS 128 PowerShell Scripting or Network Administrators
 CNS 132 Linux Administration II
 CNS 141 Wireless Networking
 CNS 232 Computer Forensics II

3D Design and Animation – Associate in Applied Science

(DDDA.AAS)

Along with the film industry, the gaming production industry is one of the fastest growing markets to begin your career as a digital artist. Traditional hands-on skills and appreciation for the virtual and digital realms are highly desirable. Artists who want experience with challenging, creative work that's action-packed, collaborative, and exhilarating should inquire here.

Minimum credits	65
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (21 credits)

ADO 1: Write clearly, concisely and intelligibly (3 credits)

Take the following:

ENG	131	Writing Experience I
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ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Choose one of the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Take the following:

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (4-5 credits)

Choose one of the following:

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Human Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3-4 credits)

Choose one of the following:

ECN	231	Macroeconomics
ECN	232	Microeconomics
HIS	131	Western Civilization to 1555
HIS	132	Western Civilization 1555 to Present
HIS	231	Development of the US through the Civil War
HIS	232	Development of the US from the Civil War
HIS	235	20th Century History
PLS	141	American National Government
PSY	140	Introduction to Psychology

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement.

ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)

Choose one of the following:

HPF	160	Wellness
HPF	186	Weight Training and Wellness
HPF	277	Stress Management
HPF	283	Managing Stress and Holistic Health
PHL	236	Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement.

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses, COM 231 or COM 240, meet this requirement.

3D DESIGN AND ANIMATION RELATED REQUIREMENTS (15 credits)

ART	103	Drawing I: Foundations
ART	205	Drawing II: Figure & Composition
ENG	232	Technical & Business Writing
THR	242	Sound for Stage and Video
VID	101	Video Production I

3D DESIGN AND ANIMATION CORE REQUIREMENTS (29 credits)

CIS	101	Introduction to Computer Systems OR
CIS	201	Advanced Information Technology
CIS	134	Graphic Imaging (Adobe® PhotoShop®)
CIS	147	Web Page Design I (Dreamweaver®)
CIS	171	3D Modeling I
CIS	172	Lighting and Texturing
CIS	247	Web Page Design II (Dreamweaver®)
CIS	271	3D Modeling II
CIS	173	Animation I
CIS	272	Computer Gaming Fundamentals

Entrepreneurship – Associate in Applied Science

(ENTR.AAS)

Entrepreneurship is a discipline that can be applied to virtually any endeavor. Entrepreneurs start their own businesses and non-profit organizations, but they also identify opportunities and develop innovative solutions within the established organizations for which they work (these types of entrepreneurs are often known as “intrapreneurs”). Given our rapidly changing world, every sector of the economy is looking for people who can analyze market potential and devise strategies to creatively meet the needs of clients. Many of the world’s most successful people are entrepreneurs who have been able to devise and implement these creative strategies.

An associate degree or certificate in entrepreneurship is highly adaptable and can be coupled with expertise in another discipline, allowing students to focus in areas which match their passions, skills and opportunities in the marketplace.

Minimum credits	60
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (23 credits)

ADO 1: Write clearly, concisely and intelligibly (6 credits)

Take the following:

ENG	131	Writing Experience I
ENG	232	Technical & Business Writing

ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Take the following:

COM	240	Interpersonal Communication
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ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Take the following:

MAT	133	Introduction to Probability & Statistics
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ADO 4: Demonstrate scientific reasoning (4-5 credits)

Choose one of the following:

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Anatomy & Physiology
BIO	158	Environmental Science
BIO	220	Microbiology
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them and their implications for the present and future (3 credits)

Take the following:

ECN	231	Macroeconomics
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ADO 6: Understand aesthetic experience and artistic creativity

Program courses meet this requirement.

ADO 7: Think critically

Program courses meet this requirement.

ADO 8: Make responsible decisions in personal and professional contexts

Program courses meet this requirement.

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement.

ADO 10: Understand and respect the diversity and interdependence of the world’s people and cultures (3 credits)

Choose one of the following:

ENG	236	Women in a Changing Society
FRN	131	Elementary French I or higher
GER	131	Elementary German I or higher
HIS	125	African-American History
HUM	131	Cultural Connections
MUS	132	History of American Popular Music
PLS	262	International Relations

ENTREPRENEURSHIP RELATED REQUIREMENTS*(17 credits)**Take the following:*

ACC	216	Financial Accounting Concepts OR
ACC	231	Principles of Accounting I
BUA	121	Leadership
BUA	250	Business Law
CIS	101	Intro to Computer Systems OR
CIS	201	Advanced Information Technologies
CIS	133	Brand Identity Design
STM	101	Introduction to Sustainability

ENTREPRENEURSHIP CORE REQUIREMENTS*(9 credits)**Take the following:*

ENT	101	Entrepreneurship: Creating Your Own Job
ENT	102	Entrepreneurial Marketing: Finding Your Niche
ENT	169	Business Plan

ELECTIVES (11 credits total)

Select electives from courses in ACC, AFT, ALT, ART, AUT, BIO, BUA, CCT, CEM, CIS, CNS, CPS, CRJ, CUL, DMS, ECM, ECN, EDU, EGR, ELT, ENG, GEL, HOC, HPF, MAT, MFG, MIC, MOA, MUS, NSC, PHY, PLS, PTC, PSY, SOC, THR, VID, or WLD to meet the 60 credits required for this degree.

Entrepreneurship – Certificate (*ENTR.CERT*)

This program begins applying the analytical skills which will assist students in creatively solving problems and meeting the needs of constituents either in their own company or in another organization in which they serve. Students can adapt these skills to whatever field(s) of endeavor they decide to pursue.

Minimum credits	30
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (10 credits)*Take the following:*

COM	240	Interpersonal Communication
ENG	131	Writing Experience I
MAT	133	Introduction to Probability & Statistics

ENTREPRENEURSHIP CORE REQUIREMENTS*(17 credits)**Take the following:*

ACC	216	Financial Accounting Concepts OR
ACC	231	Principles of Accounting I
CIS	101	Introduction to Computer Systems OR
CIS	201	Advanced Information Technologies
CIS	133	Brand Identity Design
ENT	101	Entrepreneurship: Creating Your Own Job
ENT	102	Entrepreneurial Marketing: Finding Your Niche
ENT	169	Business Plan

ELECTIVES (3 credits)

Select course(s) from the list of elective categories at left under Entrepreneurship-Associate in Applied Science.

Entrepreneurship – Skill Set

(ENTR.SSET)

This program is designed to assist the student in making informed decisions regarding the many benefits and costs of starting your own business and finding the right business opportunity “fit.” In addition, you will prepare a completed business plan presentation.

Minimum credits	12
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	10

ENTREPRENEUR RELATED REQUIREMENTS (3 credits)*Take the following:*

CIS	101	Introduction to Computer Systems
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ENTREPRENEUR CORE REQUIREMENTS (9 credits)*Take the following:*

ENT	101	Entrepreneurship: Creating Your Own Job
ENT	102	Entrepreneurial Marketing: Finding Your Niche
ENT	169	Business Plan

Executive Assistant – Associate in Applied Science

(EXAS.AAS)

Executive assistants are professional-level positions who provide support for senior management and executives (VPs, CEOs, CFOs, etc.) of almost every business type, including industrial,

retail, medical, legal, finance, education, hospitality, chain stores/ restaurants, stock market, non-profits and more. They use expert computer skills to organize and manage their boss's reports and time commitments, often deal with confidential information, and have authority in the executive's absence thereby requiring exceptional critical thinking and interpersonal skills. Executive support positions have to possess proven multi-faceted skills so an internship or work experience may enhance one's employability and success.

Minimum credits	61
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	17

GENERAL EDUCATION REQUIREMENTS (20 credits)

ADO 1: Write clearly, concisely and intelligibly (3 credits)

Take the following:

ENG	131	Writing Experience I
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ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Choose one of the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Take the following:

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (4-5 credits)

Choose one of the following:

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy and Physiology I
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them and their implications for the present and future (3 credits)

Choose one of the following:

ECN	231	Macroeconomics
ECN	232	Microeconomics

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement

ADO 8: Make responsible decisions in personal and professional contexts

Program courses, BUA 220 or BUA 250, meet this requirement

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses, COM 231 or COM 240 or BUA 100, meet this requirement

EXECUTIVE ASSISTANT RELATED REQUIREMENTS (17 credits)

Take the following:

ACC	216	Financial Accounting Concepts OR
ACC	231	Principles of Accounting I
CIS	125	Microsoft® Expressions® Web
CIS	101	Introduction to Computer Systems OR
CIS	201	Advanced Information Technologies
CIS	210	Office Administration Systems
CIS	245	Internship/Externship
ENG	232	Technical & Business Writing

EXECUTIVE ASSISTANT CORE REQUIREMENTS (24 credits)

Take the following:

BUA	100	Contemporary Business
BUA	120	Human Relations in Business
BUA	121	Leadership
BUA	130	Customer Service
BUA	220	Principles of Management
BUA	221	Human Resource Management
BUA	230	Principles of Marketing
BUA	250	Business Law I

Financial Services – Concentration (*FISR.CON*)

This credential prepares students for work in the banking and financial services industries. Job opportunities could include introductory positions with banks (teller or customer service representative), trust offices, pension and retirement planning firms, personal financial planning groups and investment brokerage houses (clerk or customer service representative). Students acquire skills in customer relations and financial problem solving. Students learn about financial markets and economic issues.

Minimum credits	17
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

CORE COURSES (17 credits)

ACC	216	Financial Accounting Concepts
BUA	110	Introduction to Wall Street
BUA	111	Personal Finance
BUA	120	Human Relations
BUA	130	Customer Service
ECN	232	Microeconomics

Management – Certificate

(*MGMT.CERT*)

People with management skills are employed in every industry in the career world. This program will build on your natural ability to get along with people and help develop your leadership potential. The focus in this program is on the principles, theories and application of planning, organizing, leading, staffing and evaluating results. Having good communication skills and the ability to make reliable decisions without supervision are essential to beginning a career in management.

Minimum credits	30
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (10 credits)

Take the following:

ENG	131	Writing Experience I
ENG	232	Technical & Business Writing
MAT	131	Intermediate Algebra or higher

MANAGEMENT RELATED REQUIREMENTS (4 credits)

Take the following:

ACC	231	Principles of Accounting I OR
ACC	216	Financial Accounting Concepts

MANAGEMENT CORE REQUIREMENTS (12 credits)

Take the following:

BUA	100	Contemporary Business
BUA	130	Customer Service OR
BUA	120	Human Relations
BUA	220	Principles of Management
BUA	221	Human Resource Management

ELECTIVES

Select electives from classes in ACC, BUA, CIS or ECN in order to meet 30 credits required for certificate. FIN courses have been replaced with BUA.

Marketing – Certificate

(*MRKT.CERT*)

Individuals considering a marketing career should be good listeners, enjoy current events and look forward to the business challenges that come with changing cultural habits. Also important are the abilities to think creatively, communicate effectively and manage time wisely to meet deadlines.

Minimum credits	33
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (10 credits)

Take the following:

ENG	131	Writing Experience I
ENG	232	Technical & Business Writing
MAT	131	Intermediate Algebra or higher

MARKETING CORE REQUIREMENTS (12 credits)

Take the following:

BUA	100	Contemporary Business
BUA	130	Customer Service
BUA	230	Principles of Marketing
BUA	231	Advertising, Promotion & Public Relations

MARKETING RELATED REQUIREMENTS (11 Credits)

CIS	201	Advanced Information Technology OR
ECM	201	Advanced Information Technology

ECM	220	eBusiness: SEO / Management / Measurement
CIS	126	Digital Design Fundamentals
CIS	133	Brand Identity Design
CIS	138	Image Editing Applications

Microsoft® Networking – Concentration (MSNW.CON)

Minimum credits	26
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

REQUIRED COURSES (26 credits)

Take the following:

CIS	174	PC Repair / A+ Hardware Component
CIS	175	PC Repair / A+ Software Component
CIS	176	A+ Certification Exam Preparation
CNS	101	Network+/Networking Fundamentals
CNS	102	Routing Protocols and Concepts
CNS	121	Microsoft® Networking Client I
CNS	122	Microsoft® Networking Client II
CNS	201	Network Security/Security+
CNS	231	Firewalls and Intrusion Detection

Microsoft® Office® Specialist – Certificate (MSOS.CERT)

Students completing this program are prepared to assume a variety of positions in an automated office setting. The program recognizes the increasingly important role of the personal computer in modern business and is designed to assist students in developing their skills in the use of graphing, personal management, project management and electronic presentations. The Microsoft® Office® Specialist program provides a framework for measuring student proficiency with Microsoft® Office® applications and prepares students for the industry recognized Microsoft® exams for measuring an individual's mastery of Office® applications. Students completing the program could be hired at entry-level positions such as secretaries, help desk technicians, administrative assistants and stenographers. Students can continue and pursue an associate degree for the administrative assistant program.

Minimum credits	38
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (13 credits)

Take the following:

ENG	131	Writing Experience I
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Choose one of the following:

ENG	132	Writing Experience II OR
ENG	232	Technical & Business Writing

Choose one of the following:

MAT	131	Intermediate Algebra OR
MAT	133	Introduction to Probability & Statistics OR
MAT	135	Finite Mathematics (preferred) OR
MAT	141	Pre-Calculus OR
MAT	151	Calculus

Choose one of the following:

COM	231	Communication Fundamentals OR
COM	240	Interpersonal Communication

MICROSOFT® OFFICE® SPECIALIST CORE REQUIREMENTS (25 credits)

Take the following:

CIS	110	Beginning Keyboarding/Typing
CIS	117	Microsoft® Outlook® Workshop
CIS	118	Microsoft® Publisher® Windows®
CIS	119	Microsoft® PowerPoint®
CIS	120	Microsoft® Word® Comprehensive
CIS	121	Microsoft® Excel® Comprehensive
CIS	122	Microsoft® Access® Comprehensive
CIS	125	Microsoft® Expression® Web OR
CIS	147	Web Page Design I (Dreamweaver®)
CIS	201	Advanced Computer Information Technologies
CIS	210	Office Administration Systems

Microsoft® Office® Specialist – Concentration (MSOS.CON)

These courses are part of the Microsoft® Certified Applications Specialist credential tests. Students who pass the "expert" Word® and Excel® exams and the "specialist" Access® and PowerPoint® exams will receive "Master" recognition from the Microsoft® Corporation. Other levels of Microsoft® Office® certification are available from Microsoft® as students begin passing exams. The successful completion of Microsoft® Office® sponsored exams are in addition to the successful completion of JC's courses for credit. For specific information on Microsoft® certification, students should talk with the program advisor. Students completing the program could be hired at entry-level positions such as office clerks, receptionists or help desk technicians. Students completing this concentration can continue on with the Computer Support Specialist Certificate and Associate degree or the Microsoft Office Specialist Certificate and Administrative Assistant Associate degree.

Minimum credits	18
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

REQUIRED COURSES (18 credits)

Take the following:

CIS	110	Beginning Keyboarding/Typing
CIS	119	Microsoft® PowerPoint®
CIS	120	Microsoft® Word® Comprehensive
CIS	121	Microsoft® Excel® Comprehensive
CIS	122	Microsoft® Access® Comprehensive
CIS	125	Microsoft® Expression® Web OR
CIS	147	Web Page Design I (Dreamweaver®)
CIS	201	Advanced Information Technologies

SUGGESTED COURSE SEQUENCE

Fall Semester (18)

CIS 110, CIS 119, CIS 120, CIS 121, CIS 122, CIS 125 or CIS 147, CIS 201

Networking Specialist – Associate in Applied Science (NESP.AAS)

Networking involves the hardware, software and communication channels necessary to allow computers to talk to each other. Most organizations use computer networks and need networking specialists to maintain their networks. Several other occupations may utilize networking skills, such as office assistants, accountants or managers. Students will study the various components of networking and how to secure them. These courses help prepare students to take industry certification exams from CompTIA, Cisco, Microsoft and others. For specific information on these certifications, please talk to the instructors.

Minimum credits	64
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (21 credits)

ADO 1: Write clearly, concisely and intelligibly (3 credits)

Take the following:

ENG	131	Writing Experience I
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ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Choose one of the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Take the following:

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (4-5 credits)

Choose one of the following:

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Human Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy and Physiology I
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3-4 credits)

Choose one of the following:

ECN	231	Macroeconomics
ECN	232	Microeconomics
HIS	131	Western Civilization to 1555
HIS	132	Western Civilization 1555 to Present
HIS	231	Development of the US through the Civil War
HIS	232	Development of the US from the Civil War
HIS	235	20th Century History
PLS	141	American National Government
PSY	140	Introduction to Psychology
SOC	231	Principles of Sociology

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement.

ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)

Choose one of the following:

HPF	160	Wellness
HPF	186	Weight Training and Wellness
HPF	277	Stress Management
HPF	283	Managing Stress and Holistic Health
PHL	236	Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement.

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program course, COM 231 or COM 240 or BUA 100, meets this requirement.

NETWORKING CORE REQUIREMENTS (28 credits)

Take the following:

CNS	101	Network Fundamentals/Network+
CNS	102	Routing Protocols and Concepts
CNS	103	LAN Switching and Wireless
CNS	104	Accessing the WAN
CNS	121	Microsoft® Networking Client I
CNS	123	Microsoft Networking Server I
CNS	131	Linux Administration I
CNS	201	Network Security/Security+
CNS	231	Firewalls and Intrusion Detection

CYBER SECURITY REQUIREMENTS (12 credits)

Take the following:

CNS	122	Microsoft® Networking Client II
CNS	124	Microsoft® Networking Server 4
CNS	125	Microsoft® Directory Service
CNS	128	PowerShell Scripting for Network Administrators

COMPUTER NETWORK AND SECURITY ELECTIVES (3 credits)

Take 3 credits from:

CIS	158	Programming Logic
CIS	160	Programming in Visual Basic.NET
CIS	165	JAVA Programming
CIS	170	Programming in C++
CIS	174	PC Repair/A+ Hardware Components
CIS	175	PC Repair/A+ Software Components
CNS	221	Securing Microsoft Networks
CNS	132	Linux Administration II
CNS	141	Wireless Networking
CNS	232	Computer Forensics I
CNS	233	Hacker Techniques and Incident Handling
CNS	235	Packet Analysis and Network Forensics

Networking Specialist – Certificate (NESP.CERT)

Networking involves the hardware, software and communication channels necessary to allow computers to talk to each other. Students will study various components of computer networking. Each 200-level networking class helps prepare students with the skills and knowledge to take vendor-sponsored certification exams. Students who pass the related core exams will be CompTIA Network+ certified and recognized as a Microsoft® Certified Systems Administrator (MCSA). Students who pass the appropriate related elective exam can also achieve the premier certifications of Microsoft® Certified System Engineer (MCSE) and Certified Cisco Network Administrator (CCNA). Nearly all organizations of any size use computer networks to leverage their core competencies. These organizations need trained networking specialists to install, maintain and troubleshoot their networks. The CompTIA and Microsoft® certifications are recognized as industry standards and are required by many employers.

Minimum credits	32
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (7 credits)

Take the following:

ENG	131	Writing Experience I
MAT	131	Intermediate Algebra or higher

NETWORKING SPECIALIST CORE REQUIREMENTS (25 credits)

Take the following:

CNS	101	Network Fundamentals/Network+
CNS	102	Routing Protocols and Concepts
CNS	103	LAN Switching and Wireless
CNS	104	Accessing the WAN
CNS	121	Microsoft® Networking Client I
CNS	122	Microsoft® Networking Client II
CNS	201	Network Security/Security+
CNS	231	Firewalls and Intrusion Detection

Network+/Security+ – Concentration (NWSC.CON)

There is compelling evidence that neither technologies nor policies alone offer effective protection against security threats. Theft and destruction of intellectual property takes place despite the presence of firewalls, encryption and corporate edicts. Industry and governments around the world must have a well-trained workforce to effectively combat hackers, attacks and security threats. The Network+/Security+ is designed to prepare students to work as an information technology professional with a knowledge of information security within computer networks. Both the CompTIA (Computing Technology Industry Association) Network+ and Security+ certifications are recognized as basic industry standards and are required by many employers. JC provides this program to prepare students to pass both exams. The exams are administered by CompTIA agents.

Minimum credits	19
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

REQUIRED COURSES (19 credits)

Take the following:

CNS	101	Network+/Networking Fundamentals
CNS	102	Routing Protocols and Concepts
CNS	121	Microsoft® Networking Client I
CNS	122	Microsoft® Networking Client II
CNS	201	Network Security/Security+
CNS	231	Firewalls and Intrusion Detection

Sales – Associate in Applied Science (SALE.AAS)

Sales jobs occur in every industry including pharmaceutical sales, transportation sales, insurance sales, food sales, wholesale sales, real estate sales, leisure and vacation sales, and more. Selling skills may be combined with other degrees for specific expertise in a particular industry. Excellent communication skills are necessary to explain the product, service or experience features and benefits to clients and purchasing agents. The sales certificate is an excellent way to enter the field working for small organizations while the sales degree is for those interested in large organizations and working into positions of greater responsibility.

Minimum credits	61
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (20 credits)

ADO 1: Write clearly, concisely and intelligibly (3 credits)

Take the following:

ENG	131	Writing Experience I
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ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Choose one of the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Take the following:

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (4-5 credits)

Choose one of the following:

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy and Physiology I
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them and their implications for the present and future (3 credits)

Choose one of the following:

ECN	231	Macroeconomics
ECN	232	Microeconomics

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement

ADO 8: Make responsible decisions in personal and professional contexts

Program courses, BUA 220 or BUA 250, meet this requirement

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses, COM 231 or COM 240 or BUA 100, meet this requirement

SALES RELATED REQUIREMENTS (17 credits)

Take the following:

ACC	216	Financial Accounting Concepts OR
ACC	231	Principles of Accounting I
CIS	101	Introduction to Computer Systems OR
CIS	201	Advanced Information Technologies
ECM	220	eBusiness: SEO / Management/ Measurement
PSY	140	Introduction to Psychology
THR	216	Voice for the Actor

SALES CORE REQUIREMENTS (24 credits)

Take the following:

BUA	100	Contemporary Business
BUA	121	Leadership
BUA	122	Small Business Management
BUA	130	Customer Service
BUA	131	Effective Selling
BUA	220	Principles of Management
BUA	230	Principles of Marketing
BUA	250	Business Law I

Sales – Certificate (SALE.CERT)

Sales jobs occur in every industry and may be combined with other degrees for specific expertise. Also, "selling one's talents" is necessary in communicating during interviews for employment and "closing the deal" finalizes an agreement or sale in any negotiation situation. Excellent communication skills are necessary to explain the experience, product, service features and benefits that address client concerns. The sales certificate is an excellent way to enter the field working for small organizations.

Minimum credits	32
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (7 credits)

Take the following:

ENG	131	Writing Experience I
MAT	131	Intermediate Algebra or higher

SALES RELATED REQUIREMENTS (13 credits)

Take the following:

ACC	216	Financial Accounting Concepts OR
ACC	231	Principles of Accounting I
CIS	101	Introduction to Computer Systems OR
CIS	201	Advanced Information Technologies
ECM	220	eBusiness: SEO/Management
THR	216	Voice for the Actor

SALES REQUIREMENTS (12 credits)

Take the following:

BUA	100	Contemporary Business
BUA	130	Customer Service
BUA	131	Effective Selling
BUA	122	Small Business Management

Web Technology: Ecommerce Consultant Certificate (WTEC.CERT)

Upon completion students will be skilled to consult with clients regarding their desires for an eCommerce site, as well as manage inventory through integrated database technology.

Minimum credits	36
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (7 credits)

Take the following:

ENG	131	Writing Experience I
MAT	131	Intermediate Algebra or higher

ECOMMERCE CONSULTANT CORE REQUIREMENTS (29 credits)

Take the following:

CIS	122	Microsoft® Access® Comprehensive-Windows®
CIS	125	Microsoft® Expressions® Web
CIS	133	Digital Image Design
CIS	135	Open Source Web Design
CIS	138	Image Editing Applications
CIS	143	HTML

CIS	158	Programming Logic
CIS	244	Web Programming
CIS	246	Web Integration with Database
ECM	101	eCommerce Fundamentals
ECM	201	Advanced Information Technologies
ECM	220	eBusiness II: SEO/Management
ENT	101	Entrepreneurship: Creating Your Own Job

Web Technology: Ecommerce Designer – Skill Set (WTED.SSET)

Upon completion students will be skilled to use open source or boxed software to build an eCommerce website considerate of legal requirements, eCommerce concepts and technology requirements.

Minimum credits	5
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	5

ECOMMERCE DESIGNER CORE REQUIREMENTS (5 credits)

Take the following:

EMC	101	eCommerce Fundamentals
CIS	125	Microsoft® Expressions® Web
CIS	135	Open Source Web Design

Web Technology: Ecommerce Entrepreneur – Concentration (WTEE.CON)

Upon completion students will be skilled to assess the opportunities available to launch an entrepreneurial venture, as well as develop a plan to incorporate an eCommerce website.

Minimum credits	20
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

ECOMMERCE ENTREPRENEUR CORE REQUIREMENTS (20 credits)

Take the following:

CIS	125	Microsoft® Expressions® Web
CIS	135	Open Source Web Design
CIS	143	HTML
ECM	101	eCommerce Fundamentals
ECM	201	Advanced Information Technologies

ECM	220	eBusiness II: SEO/Management
ENT	101	Entrepreneurship: Creating Your Own Job
ENT	102	Entrepreneurial Marketing: Finding Your Niche
ENT	169	Business Plan

Web Technology: Ecommerce Manager – Skill Set (WTEM.SSET)

Upon completion students will be skilled to manage an eCommerce site's search engine optimization, share product files across platforms, and utilize mobile technologies and advertising campaigns to ensure optimal efficiency of the site.

Minimum credits	9
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	9

ECOMMERCE MANAGER CORE REQUIREMENTS (9 credits)

Take the following:

ECM	101	eCommerce Fundamentals
ECM	201	Advanced Information Technologies
ECM	220	eBusiness II: SEO/Management

Web Technology: Ecommerce Specialist – Concentration (WTES.CON)

Upon completion, students will be skilled to design an eCommerce site, manage its traffic and maximize the appearance of the site in search engine results.

Minimum credits	15
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

ECOMMERCE SPECIALIST CORE REQUIREMENTS (15 credits)

Take the following:

CIS	125	Microsoft® Expressions® Web
CIS	133	Digital Image Design
CIS	135	Open Source Web Design
CIS	138	Image Editing Applications
CIS	143	HTML
ECM	101	eCommerce Fundamentals
ECM	201	Advanced Information Technologies
ECM	220	eBusiness II: SEO/Management

ACCOUNTING OR BUSINESS ADMINISTRATION BACHELOR'S DEGREE OPTION WITH SIENA HEIGHTS UNIVERSITY

Through an articulation agreement with Siena Heights University, graduates of JC's two-year business programs can earn a Bachelor of Arts in accounting or a Bachelor of Arts in business. Students can work with JC and Siena Heights staff members to select a completion program for their specific career goals. All the courses required to earn a bachelor's degree are available at Jackson College's main campus through the Siena Heights University degree-completion center.

ACCELERATED BUSINESS DEGREE PROGRAM WITH SIENA HEIGHTS UNIVERSITY

Jackson College and Siena Heights University have partnered to offer students the opportunity to complete a Bachelor of Business Administration degree in three years, rather than four, through the Accelerated Business Program. Students complete their first 90 credits at the JC tuition rate, earning their Management Certificate, Marketing Certificate, and Associate of Business Administration Degree in the first two years. They then matriculate to SHU for the final year and 30 credits to earn their Bachelor of Business Administration Degree. The ABP courses are guaranteed on Tuesday evenings and alternating Saturdays; are built in hybrid format, part in the classroom and part online; and are offered at the Adrian campus of Jackson College, JC @ LISD TECH. Students are admitted into a cohort group that traverses all the courses together; program cohorts begin each fall semester. Interested students must complete the ABP application found on the JC @ LISD TECH portion of the institutional website. For more information, please contact the Adrian JC @ LISD TECH location.

Transfer Programs

COMPUTER SCIENCE

Computer science majors can concentrate and think logically, and enjoy working with ideas and solving problems. They become computer programmers, systems analysts, systems programmers and software engineers, have careers in telecommunications and computer operations, and hold positions in computer sales, design and manufacturing. The requirements for this degree – especially mathematics and science requirements – vary considerably among transfer institutions. Please see an advisor for more information.

SUGGESTED COURSE SEQUENCE FOR COMPUTER SCIENCE

First Year, Fall Semester

ENG 131, MAT 151, CEM 141, Michigan Transfer Agreement humanities course

First Year, Winter Semester

ENG 132, CPS 177, MAT 154, ECN 231, PHL 232

Second Year, Fall Semester

CPS 217, MAT 251, PHY 251, Michigan Transfer Agreement social science course

Second Year, Winter Semester

MAT 254, Michigan Transfer Agreement social science and humanities courses

ADMINISTRATIVE ASSISTANT – BACHELOR'S DEGREE OPTION WITH SIENA HEIGHTS UNIVERSITY

Students can work with staff from JC and Siena Heights University to earn a Bachelor of Arts degree for administrative assistant. Tailored to build on the JC administrative assistant associate degree, students can transfer up to 90 credits from JC and complete at least 30 credit hours from Siena Heights.

MICROCOMPUTER APPLICATIONS – BACHELOR'S DEGREE OPTION WITH SIENA HEIGHTS UNIVERSITY

Students can work with staff from JC and Siena Heights University to earn a Bachelor of Arts degree for microcomputer applications. Tailored to build on the JC computer support specialist associate degree, students can transfer up to 90 credits from JC and complete at least 30 credit hours from Siena Heights.





Automotive Technology, Aviation and Engineering Pathway

This pathway includes careers related to technologies necessary to design, develop, install or maintain physical systems. These may include engineering and related technologies, and construction.

DEGREES/CERTIFICATES:

- Automotive Collision Repair
- Automotive Service Technology
- Aviation Technology
- Electrician
- Electronic Technology/ELT
- Electronic Technology/Microcomputer Support
- Energy Systems Technology

TRANSFER PROGRAMS

The first two years of a student's college education usually consists of general study courses, introductory courses in a major and/or program of study, and selected electives. Academic advisors assist students in planning their transfer program. They can also provide transfer guide sheets indicating JC courses that meet the requirements of various programs of study at four-year colleges. Sample curricula for a few popular transfer programs are included.

- Pre-Architecture
- Engineering

Automotive Collision Repair – Associate in Applied Science (ACRE.AAS)

JC utilizes the Inter-industry Conference on Automotive Collision Repair (I-CAR) Enhanced Delivery Curriculum. Based on the tasks established by I-CAR, this two-year program provides students with skills to restore collision-damaged vehicles to industry standards. The importance of certification and training continues to increase in the industry among body shops and insurance companies. In response to this demand, a graduate of the program has the potential to receive 70 I-CAR Gold Points and four ASE certifications. Graduates may also take the Michigan Motor Vehicle License exams for Unitized Body Structural Repair and Collision-Related Mechanical Repair. ASE certifications in body work and painting are also available.

Program graduates are trained in five major body repair groups:

- Collision repair fundamentals
- Non-structural analysis & damage repair
- Structural analysis & damage repair
- Painting & refinishing
- Mechanical & electrical components repair

Upon completing the program, graduates are qualified for entry-level positions as collision repair technicians or automotive refinish technicians, with the option to pursue careers in management, estimating and sales. Students interested in earning an Associate in Applied Science degree in collision repair technology will take all required automotive collision repair technology courses, plus electives, and general education courses.

Minimum credits	68
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC AUT credits.....	44
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (17 credits)

ADO 1: Write clearly, concisely and intelligibly (3 credits)

Take the following:

ENG 131 Writing Experience I

ADO 2: Speak clearly, concisely and intelligibly

Program courses, AUT 103, AUT 105 or AUT 113, meet this requirement.

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Choose one of the following:

MAT 131 Intermediate Algebra or higher

ADO 4: Demonstrate scientific reasoning (4-5 credits)

Choose one of the following:

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy & Physiology I
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
GEL	160	Introduction to Geology
GEL	109	Earth Science
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3-4 credits)

Choose one of the following:

ECN	231	Macroeconomics
ECN	232	Microeconomics
HIS	131	Western Civilization to 1555
HIS	132	Western Civilization 1555 to Present
HIS	231	Development of the US through the Civil War
HIS	232	Development of the US from the Civil War
HIS	235	20th Century History
PLS	141	American National Government
PSY	140	Introduction to Psychology
SOC	231	Principles of Sociology

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement.

ADO 8: Make responsible decisions in personal and professional contexts

Program courses, AUT 103, AUT 105 or AUT 113, meet this requirement.

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement.

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses, AUT 103, AUT 105 or AUT 113, meet this requirement.

AUTOMOTIVE COLLISION REPAIR CORE REQUIREMENTS (48 credits)

Take the following:

AUT	102	Engine Performance I
AUT	103	Engine Performance II
AUT	105	Braking Systems
AUT	106	Steering & Suspension
AUT	108	Air Conditioning & Heating
AUT	112	Electrical Systems I
AUT	113	Electrical Systems II
AUT	184	Fundamentals of Collision Repair
AUT	186	Non-Structural Damage Repair
AUT	188	Welding & Cutting Steel/Aluminum
AUT	190	Structural Damage Repair
AUT	204	Manual Transmissions & Drivelines
AUT	290	Paint & Refinish I
AUT	292	Paint & Refinish II
AUT	210	Internship/Externship

AUTOMOTIVE COLLISION REPAIR ELECTIVES (3 credits)

Choose from the following:

AUT	118	Diesel Fundamentals
AUT	160	Alternate Fuels
AUT	201	Engine Repair
AUT	202	Automatic Transmissions
AUT	203	Advanced Engine Performance
AUT	211	Internship/Externship
AUT	212	Internship/Externship
AUT	214	Auto Lab Experience
AUT	240	Hybrid Technology
AUT	248	Diesel Engine Performance
AUT	294	Collision Shop Layout

Automotive Collision Repair – Certificate (ACRE.CERT)

In this real-world setting, students use modern equipment such as three electronic measuring systems, body and frame machines, two down-draft spray booths, computerized mixing systems, prep stations, MIG welders and a resistant spot welder. JC utilizes the Inter-industry Conference on Automotive Collision Repair (I-CAR) Enhanced Delivery Curriculum.

The following sections are sequenced with prerequisites for student success. Those students wishing to further their education can apply these courses directly toward our Associate of Applied Science (AAS) program.

Minimum credits	55
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15
Minimum AUT credits	12

AUTOMOTIVE COLLISION REPAIR GENERAL EDUCATION REQUIREMENTS (7 credits)

Take the following:

ENG	131	Writing Experience I
MAT	131	Intermediate Algebra or higher

AUTOMOTIVE COLLISION REPAIR CORE REQUIREMENTS (48 credits)

Take the following:

AUT	102	Engine Performance I
AUT	103	Engine Performance II
AUT	105	Braking Systems
AUT	106	Steering & Suspension
AUT	108	Air Conditioning & Heating
AUT	112	Electrical Systems I
AUT	113	Electrical Systems II
AUT	184	Fundamentals of Collision Repair
AUT	186	Non-Structural Damage Repair
AUT	188	Welding & Cutting Steel/Aluminum
AUT	190	Structural Damage Repair
AUT	204	Manual Transmissions & Drivelines
AUT	290	Paint & Refinish I
AUT	292	Paint & Refinish II
AUT	210	Internship/Externship

Collision Body Tech – Concentration (*COBT.CON*)

This concentration allows students to focus on a career in collision repair with emphasis on structural and non-structural components of the automobile. Through repair of vehicles students will develop and apply skills such as welding, damage analysis and refinishing. This concentration prepares students for employment as a body technician in the auto repair industry.

Minimum credits	16
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

REQUIRED COURSES (16 credits)

Take the following:

AUT	184	Fundamentals of Collision Repair
AUT	186	Non-Structural Damage Repair
AUT	188	Welding & Cutting Steel/Aluminum
AUT	190	Structural Damage Repair
AUT	210	Internship/Externship

Collision Body Tech – Skill Set (*COBT.SSET*)

Students will focus on a career in collision repair with emphasis on welding techniques and damage analysis. Students may want to further this exposure through additional automotive course work in related concentrations, certificates or an associate degree.

Minimum credits	6
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	6

REQUIRED COURSES (6 credits)

Take the following:

AUT	188	Welding & Cutting Steel/Aluminum
AUT	190	Structural Damage Repair

Collision Mechanical & Electrical – Concentration

(*COME.CON*)

Students will be exposed to various automotive processes including electrical systems, mechanical repairs and general diagnosis. Students will apply learned skills to collision-related repairs. This concentration prepares students for entry-level positions within a collision repair facility.

Minimum credits	24
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

REQUIRED COURSES (24 credits)

Take the following:

AUT	102	Engine Performance I
AUT	103	Engine Performance II
AUT	105	Braking Systems
AUT	106	Steering & Suspension
AUT	108	Air Conditioning & Heating
AUT	112	Electrical Systems I
AUT	113	Electrical Systems II
AUT	204	Manual Transmissions & Drivelines

Collision Non-Structural Tech – Skill Set (*CONT.SSET*)

This foundational skill set is designed to expose students to the automotive collision environment. Students may want to further this exposure through additional automotive course work in related concentrations, certificates or an associate degree.

Minimum credits	6
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	6

REQUIRED COURSES (6 credits)

Take the following:

AUT	184	Fundamentals of Collision Repair
AUT	186	Non-Structural Damage Repair

Collision Refinishing Tech – Skill Set (*CORT.SSET*)

This foundational skill set is designed to expose students to collision repair and refinishing. Students may want to further this exposure through additional automotive course work in related concentrations, certificates or an associate degree.

Minimum credits	6
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	6

REQUIRED COURSES (6 credits)

Take the following:

AUT	290	Paint & Refinish I
AUT	292	Paint & Refinish II

Automotive Service Technology– Associate in Applied Science (*AUTO.AAS*)

Designed for the student preparing for a career in the automotive field. Classroom activities provide students an opportunity to learn theory and test-taking skills to successfully pass the Michigan and/or ASE certification examinations. Shop activities provide students an opportunity to become proficient in testing, diagnosing and servicing the various systems of the automobile. All eight areas of an automotive certification are thoroughly covered, and when combined with general and related courses, lead to an Associate in Applied Science degree. This provides the background for employment and advancement in various automotive-related occupations such as service technician, service writer, service manager, proving grounds testing technician, shop owner, parts specialist, automotive machinist, alternate fuel vehicle technician, technical sales and motor sports.

As part of the Ford Maintenance and Light Repair network, our Ford corporate-sponsored connection, students have the option to enter into the Ford MLR program. This prepares students to work as a technician in Ford, Lincoln or Mercury dealerships. These students take the same automotive classes as other students with some important differences. Ford MLR students concentrate on electrical systems, climate control, brakes, and suspension and steering. They utilize Ford training materials including service manuals, electrical/vacuum troubleshooting manuals, technical service bulletins, use Ford-approved tools and equipment, work on Ford automobiles/light trucks and use Ford web-based training with exit tests. Upon successful completion of the courses, students are Ford certified with Service Technician Specialty Training credentials. With these credentials students will receive assistance in obtaining Ford, Lincoln or Mercury dealership placement to work in the areas of certification.

Minimum credits	62
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC AUT credits	15
Minimum JC credits	12

GENERAL EDUCATION REQUIREMENTS (17 credits)

ADO 1: Write clearly, concisely and intelligibly (3 credits)

Take the following:

ENG	131	Writing Experience I
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ADO 2: Speak clearly, concisely and intelligibly

Program courses, AUT 103, AUT 105 or AUT 113, meet this requirement.

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Choose one of the following:

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (4-5 credits)

Choose one of the following:

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy and Physiology I
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3-4 credits)

Choose one of the following:

ECN	231	Macroeconomics
ECN	232	Microeconomics
HIS	131	Western Civilization to 1555
HIS	132	Western Civilization 1555 to Present
HIS	231	Development of the US through the Civil War
HIS	232	Development of the US from the Civil War
HIS	235	20th Century History
PLS	141	American National Government
PSY	140	Introduction to Psychology
SOC	231	Principles of Sociology

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)*Choose one of the following:*

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically*Program courses meet this requirement.***ADO 8: Make responsible decisions in personal and professional contexts***Program courses, AUT 103, AUT 105 or AUT 113, meet this requirement.***ADO 9: Work productively with others, recognizing individual contributions to group success***Program courses meet this requirement.***ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures***Program courses, AUT 103, AUT 105 or AUT 113, meet this requirement.***AUTOMOTIVE SERVICE TECHNOLOGY CORE REQUIREMENTS (42 credits)***Take the following:*

AUT	101	General Service
AUT	102	Engine Performance I
AUT	103	Engine Performance II
AUT	105	Automotive Brakes
AUT	106	Suspension & Steering
AUT	108	Automotive Air Conditioning/Heating
AUT	112	Electrical Systems I
AUT	113	Electrical Systems II
AUT	201	Engine Repair
AUT	202	Automatic Transmission
AUT	204	Manual Transmissions & Drivelines
AUT	210	Internship/Externship
AUT	234	Undercar Service

AUTOMOTIVE SERVICE TECHNOLOGY ELECTIVES (3 credits)*Choose from the following:*

AUT	118	Diesel Fundamentals
AUT	160	Alternate Fuels

AUT	203	Advanced Engine Performance
AUT	211	Internship/Externship
AUT	212	Internship/Externship
AUT	214	Auto Lab Experience
AUT	240	Hybrid Technology
AUT	248	Diesel Engine Performance
WLD	100	Fundamentals of Welding

Automotive Service Technology – Certificate

(AUTO.CERT)

Designed for the student preparing for a career in the automotive field. Classroom activities provide students an opportunity to learn theory and test-taking skills to successfully pass the Michigan and/or ASE certification examinations. Shop activities provide students an opportunity to become proficient in testing, diagnosing and servicing the various systems of the automobile. All eight areas of an automotive certification are thoroughly covered, and when combined with general and related courses, lead to an Associate in Applied Science degree.

Minimum credits	49
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15
Minimum AUT credits	12

GENERAL EDUCATION REQUIREMENTS (7 credits)*Take the following:*

ENG	131	Writing Experience I
MAT	131	Intermediate Algebra or higher

AUTOMOTIVE SERVICE TECHNOLOGY CORE REQUIREMENTS (42 credits)*Take the following:*

AUT	101	General Service
AUT	102	Engine Performance I
AUT	103	Engine Performance II
AUT	105	Automotive Brakes
AUT	106	Suspension & Steering
AUT	108	Automotive Air Conditioning/Heating
AUT	112	Electrical Systems I
AUT	113	Electrical Systems II
AUT	201	Engine Repair
AUT	202	Automatic Transmission
AUT	204	Manual Transmissions & Drivelines
AUT	210	Internship/Externship
AUT	234	Undercar Service

Air Conditioning & Heating – Skill Set (ACA.H.SSET)

This foundational skill set focuses on heating and cooling systems so that students have the basic understanding and knowledge to diagnose and repair air conditioning and heating systems. Students may want to further this exposure through additional automotive course work in related concentrations, certificates or an associate degree.

Minimum credits	9
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	9

REQUIRED COURSES (9 credits)

Take the following:

AUT	108	Air Conditioning & Heating Systems
AUT	112	Electrical Systems I
AUT	113	Electrical Systems II

Driveability – Concentration

(DRAB.CON)

Students will be exposed to procedures of engine performance and diagnosis of the internal combustion engine. Students will learn how to make a logical diagnosis based on vehicle operation. Focus will be on correct use of specifications, equipment and interpretation of test results. This concentration prepares students for employment as an auto technician in the auto repair industry.

Minimum credits	21
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

REQUIRED COURSES (21 credits)

Take the following:

AUT	102	Engine Performance I
AUT	103	Engine Performance II
AUT	108	Automotive Air Conditioning/Heating
AUT	112	Electrical Systems I
AUT	113	Electrical Systems II
AUT	210	Internship/Externship

Driveability – Skill Set

(DRAB.SSET)

Students will be exposed to driveability diagnosis with a focus on engine performance. Students may want to further this exposure through additional automotive course work in related concentrations, certificates or an associate degree.

Minimum credits	14
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	14

REQUIRED COURSES (14 credits)

Take the following:

AUT	102	Engine Performance I
AUT	103	Engine Performance II
AUT	112	Electrical Systems I
AUT	113	Electrical Systems II

Ford Service – Concentration

(FOSE.CON)

Students will be exposed to the Ford Maintenance and Light Repair program with an emphasis on electrical systems, climate control, brakes, and suspension and steering. MLR students will train on Ford vehicles using Ford-approved tools, training materials and Ford service manuals. This training prepares students for work in a Ford dealership.

Minimum credits	21
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

REQUIRED COURSES (21 credits)

Take the following:

AUT	101	General Service
AUT	105	Brakes
AUT	106	Steering & Suspension
AUT	108	Air Conditioning and Heating Systems
AUT	112	Electrical Systems I
AUT	113	Electrical Systems II
AUT	234	Undercar Service
AUT	240	Hybrid Technology

High Speed Diesel Service – Concentration (*HSDS.CON*)

In this program, emphasis is on the principles of diesel operation and fuel systems. The focus will be on diesel engine performance, electronic fuel injection, and diesel fundamentals. This concentration prepares students for employment in the transportation industry with a focus on diesel repair.

Minimum credits	17
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

REQUIRED COURSES (17 credits)

Take the following:

AUT	101	General Service
AUT	102	Engine Performance I
AUT	103	Engine Performance II
AUT	112	Electrical Systems I
AUT	118	Diesel Fundamentals
AUT	248	Diesel Engine Performance

High Speed Diesel Service – Skill Set (*HSDS.SSET*)

This foundational skill set is designed to expose students to basic diesel fundamentals. Students may want to further this exposure through additional automotive course work in related concentrations, certificates or an associate degree.

Minimum credits	4
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	4

REQUIRED COURSES (4 credits)

Take the following:

AUT	118	Diesel Fundamentals
AUT	248	Diesel Engine Performance

Hybrid Vehicles – Concentration (*HYVE.CON*)

Students will be exposed to hybrid electric vehicles. Fundamental information will be reviewed focusing on engine performance, hybrid technology, diagnostics and maintenance. This concentration prepares students for employment in the auto repair industry.

Minimum credits	16
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

REQUIRED COURSES (16 credits)

Take the following:

AUT	102	Engine Performance I
AUT	103	Engine Performance II
AUT	112	Electrical Systems I
AUT	113	Electrical Systems II
AUT	240	Hybrid Technology

Hybrid Vehicles – Skill Set

(*HYVE.SSET*)

Students will be exposed to hybrid electric vehicles focusing on engine performance and hybrid technology. Students may want to further this exposure through additional automotive course work in related concentrations, certificates or an associate degree.

Minimum credits	9
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	9

REQUIRED COURSES (9 credits)

Take the following:

AUT	102	Engine Performance I
AUT	112	Electrical Systems I
AUT	240	Hybrid Technology

Maintenance & Light Repair – Concentration (*MALR.CON*)

Students will focus on repair and maintenance of the automobile. These skills include suspension and steering systems, electrical systems, heating and cooling systems and braking systems. This concentration prepares students for employment as an auto technician in the auto repair industry.

Minimum credits	19
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

REQUIRED COURSES (19 credits)

Take the following:

AUT	105	Brakes
AUT	106	Suspension & Steering
AUT	108	Air Conditioning and Heating Systems
AUT	112	Electrical Systems I
AUT	113	Electrical Systems II
AUT	210	Internship/Externship

Maintenance & Light Repair – Skill Set (*MALR.SSET*)

This foundational skill set is designed to expose students to repair and maintenance of the automobile. Fundamental skills will include suspension and steering, electrical systems, heating and cooling systems and brakes. Students may want to further this exposure through additional automotive course work in related concentrations, certificates or an associate degree.

Minimum credits	15
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	5

REQUIRED COURSES (15 credits)

Take the following:

AUT	105	Brakes
AUT	106	Steering & Suspension
AUT	108	Air Conditioning and Heating Systems
AUT	112	Electrical Systems I
AUT	113	Electrical Systems II

Powertrain – Concentration (*PWTR.CON*)

Students will be exposed to engine repair, automatic transmissions, manual transmissions and undercar service. This concentration prepares students for employment as an auto technician in the auto repair industry.

Minimum credits	17
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

REQUIRED COURSES (17 credits)

Take the following:

AUT	201	Engine Repair
AUT	202	Automatic Transmission
AUT	204	Manual Transmissions & Drivelines
AUT	210	Internship/Externship
AUT	234	Undercar Service

Powertrain – Skill Set (*PWTR.SSET*)

The emphasis in this skill set is on the power developed in the engine and power flow through driveline components. Students will learn the basics of engine repair, automatic transmissions and manual transmissions. Students may want to further this exposure through additional automotive course work in related concentrations, certificates or an associate degree.

Minimum credits	11
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	11

REQUIRED COURSES (11 credits)

Take the following:

AUT	201	Engine Repair
AUT	202	Automatic Transmission
AUT	204	Manual Transmissions & Drivelines

Undercar Service – Concentration (*UCSR.CON*)

Students will receive training in general service with emphasis on welding, pipe bending and torch use. An overview of brakes and suspension and steering is included. This concentration prepares students for employment as an auto technician in the auto repair industry.

Minimum credits	17
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

REQUIRED COURSES (17 credits)

Take the following:

AUT	101	General Service
AUT	105	Automotive Brakes
AUT	106	Suspension & Steering
AUT	108	Auto Air Conditioning/Heating
AUT	210	Internship/Externship
AUT	234	Undercar Service

Undercar Service – Skill Set

(UCSR.SSET)

The emphasis in this skill set is on pipe bending and welding. Students may want to further this exposure through additional automotive course work in related concentrations, certificates or an associate degree.

Minimum credits	8
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	8

REQUIRED COURSES (8 credits)

Take the following:

AUT	105	Brakes
AUT	106	Steering & Suspension
AUT	234	Undercar Service

Wheel Service – Concentration (WHSR.CON)

Students will receive training in wheel service skills as part of the overall diagnoses of the automobile. Subjects include brakes, suspension and steering, undercar and electrical systems. This concentration prepares students for employment as an auto technician in the auto repair industry.

Minimum credits	17
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

REQUIRED COURSES (17 credits)

Take the following:

AUT	101	General Service
AUT	105	Automotive Brakes
AUT	106	Suspension & Steering
AUT	112	Electrical Systems I
AUT	210	Internship/Externship
AUT	234	Undercar Service

Wheel Service – Skill Set

(WHSE.SSET)

The emphasis in this skill set is on wheel service and how this system is impacted by brakes and steering and suspension. It provides a foundation basis for students. Students may want to further this exposure through additional automotive course work in related concentrations, certificates or an associate degree.

Minimum credits	6
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	6

REQUIRED COURSES (6 credits)

Take the following:

AUT	105	Brakes
AUT	106	Steering & Suspension

Aviation Flight Technology – Associate in Applied Science

(AVFT.AAS)

Basic ground school and flight instruction needed to meet the requirements of the Federal Aviation Administration's Commercial Pilot certificate with instrument ratings.* Federal and/or Michigan law may require that enrollees in the aviation program undergo an FBI background check. Contact the director of aviation with questions.

Minimum credits	62
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (21 credits)

ADO 1: Write clearly, concisely and intelligibly (3 credits)

Take the following:

ENG	131	Writing Experience I
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ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Choose one of the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Take the following:

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (4 credits)*Take the following:*

PHY 231 College Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (4 credits)

PSY 140 Introduction to Psychology

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)*Choose one of the following:*

ART 111 Art History: Prehistoric to 1400
 ART 112 Art History: Renaissance to Present
 ENG 210 Introduction to Film
 ENG 246 Short Story & Novel
 ENG 247 Poetry & Drama
 ENG 252 Shakespeare
 ENG 254 Children's Literature
 ENG 255 American Literature – 19th Century
 ENG 256 American Literature – 20th Century
 HUM 131 Cultural Connections
 MUS 131 Understanding Music
 THR 116 Introduction to Theatre
 THR 145 Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement.

ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)*Choose one of the following:*

HPF 160 Wellness
 HPF 186 Weight Training and Wellness
 HPF 277 Stress Management
 HPF 283 Managing Stress and Holistic Health
 PHL 236 Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success*Program courses meet this requirement.***ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures***Program courses, COM 231 or COM 240, meet this requirement.***AVIATION FLIGHT TECHNOLOGY RELATED REQUIREMENTS (6 credits)***Take the following:*

CIS 101 Introduction to Computer Systems
 MAT 133 Introduction to Probability & Statistics

AVIATION FLIGHT TECHNOLOGY CORE REQUIREMENTS (34 credits)*Take the following:*

AFT 110 Primary Ground School
 AFT 112 Primary Flight I
 AFT 114 Primary Flight II
 AFT 116 Primary Flight III
 AFT 125 Commercial Ground School
 AFT 130 Commercial Flight I
 AFT 135 Instrumental Ground School
 AFT 140 Commercial Flight II
 AFT 200 Commercial Flight III
 AFT 205 Commercial Flight IV

**All enrollees must be capable of attaining the FAA class II medical certificate.*

Energy Systems Technology – Associate in Applied Science (EGYT.AAS)

The Energy Systems Technology — Associate of Applied Science program prepares students for careers as technicians within the energy industry. This 60-credit degree will provide students with the diverse skillset necessary to work competently within the various sectors of the industry: energy production, energy transmission and energy distribution. Students will achieve a certification in Energy Industry Fundamentals (Center for Energy Workforce Development). This program provides a foundation for the student to secure a career with a regulated provider of energy, or a non-regulated, public or private provider of energy (e.g. municipalities, heavy manufacturing, hospitals or college campuses).

Minimum credits60
 Minimum cumulative GPA 2.0
 Minimum grade in all courses..... 2.0
 Minimum JC credits 15

GENERAL EDUCATION REQUIREMENTS (27 credits)**ADO 1 Write clearly, concisely and intelligibly (6 credits)***Take the following:*

ENG 131 Writing Experience I
 ENG 232 Technical and Business Writing

ADO 2: Speak clearly, concisely and intelligibly (3 credits)*Take the following:*

COM 240 Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)*Take the following:*

MAT 131 Intermediate Algebra

ADO 4: Demonstrate scientific reasoning

Choose one of the following: If in the Science Focus Track the requirement may be met with an elective course. Please check for any prerequisite requirements. (5 credits)

CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I

ADO 5: Understand human behavior and social systems, the principles that govern them, and their implications for the present and future. (4 credits)

Take the following:

PSY	140	Introduction to Psychology
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ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry and Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre

ADO 7: Think critically

Program courses meet this requirement

ADO 8: Make responsible decisions in personal and professional contexts

Program courses meet this requirement

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures. (3 credits)

Take the following:

HUM	131	Cultural Connections
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ENERGY SYSTEMS TECHNOLOGY CORE REQUIREMENTS (32 credits)

EGY	101	EIF Energy Industry Fundamentals
MFG	105	Blueprint Reading
MFG	164	Basic Fabrication
MFG	170	Pneumatics and Hydraulics
CAD	151	Introduction to CAD
ELT	105	Introduction to Electrical Systems
ELT	220	Industrial Motion Control

STM	101	Introduction to Sustainability
ALT	200	Principles of Alternative Energy

ALT/ELT/CAD/WLD TECHNICAL ELECTIVES*

**Technical Electives include any ALT/ELT/CAD/WLD or other with lead faculty approval*

ADDITIONAL REQUIREMENT

EMS	110	Advanced First Aid & CPR OR current First Aid & Healthcare Provider CPR Rigging Safety Training
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Energy Systems – Bachelor of Science in Energy Systems Management (EGYM. BS)

This is a 120 credit, four-year program providing the advanced technical, interpersonal, and managerial skills necessary to embark on a professional career in the energy industry and to become an effective decision maker, manager, and leader within this diverse and challenging field.

Minimum credits	120
Minimum cumulative GPA	2.0
Minimum grades in all courses	2.0
Minimum JC credits	30

GENERAL EDUCATION REQUIREMENTS (57 credits)**DO 1: Write clearly, concisely, and intelligibly (6 credits)**

Take the following:

ENG	131	Writing Experience I
ENG	232	Technical and Business Writing

DO 2: Speak clearly, concisely, and intelligibly (6 credits)

Take the following:

COM	240	Interpersonal Communication
COM	350	Intercultural Communication

DO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Take the following:

MAT	131	Intermediate Algebra
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DO 4: Demonstrate scientific reasoning (11 credits)

Take the following:

CEM	141	General Chemistry
PHY	231	College Physics I OR
PHY	251	Modern University Physics I
PHY	232	College Physics II OR
PHY	252	Modern University Physics II

DO 5: Understand human behavior and social systems (13 credits)*Take the following:*

ECN	231	Macroeconomics
ECN	232	Microeconomics
PSY	140	Introduction to Psychology
PSY	344	Organizational Psychology

DO 6: Understand aesthetic experience and artistic creativity (3 credits)*Choose one of the following:*

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	240	Introduction to Film
ENG	246	Short Story and Novel
ENG	247	Poetry and Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature - 19th Century
ENG	256	American Literature - 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

DO 7: Think critically*Take the following:*

PHL	232	Logic
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DO 8: Make responsible decisions in personal and professional contexts*Program courses, including STM 101 and STM 401, meet this requirement***DO 9: Work productively with others, recognizing individual contributions to group success***Program courses, including BUA 420 and EGY 499, meet this requirement***DO 10: Understand and respect the diversity of and interdependence of the world's people and cultures (3 credits)***Take the following:*

HUM	131	Cultural Connections
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ENERGY SYSTEMS MANAGEMENT CORE REQUIREMENTS (57 credits)*Take the following:*

ALT	200	Principles of Alternative Energy
BUA	220	Principles of Management
BUA	420	Project Management and Leadership
CAD	151	Introduction to CAD
EGY	101	Energy Industry Fundamentals
EGY	250	Analytic Methods
EGY	345	Internship* (3 credits, or 3 credits technical elective)
EGY	361	Industry Materials Analysis
EGY	380	Power Grid/Smart Grid

EGY	499	Senior Seminar
ELT	105	Introduction to Electrical Systems
ELT	220	Industrial Motion Controls
MFG	105	Blueprint Reading
MFG	164	Basic Fabrication
MFG	170	Hydraulics/Pneumatics
MFG	240	Introduction to Quality Systems
STM	101	Introduction to Sustainability
STM	401	Systems Thinking

TECHNICAL ELECTIVES (6 credits)

Select any courses from ALT, CAD, ELT, MFG, or WLD to meet the program's 120 credit requirement

ADDITIONAL PROGRAM REQUIREMENTSRigging Safety Training/Certification
CPR Training/Certification**Electrician – Associate in Applied Science (ELEC.AAS)**

Electricians install and maintain electrical systems in residential construction and commercial buildings. They also work in manufacturing settings, often servicing highly automated industrial processes. Increasingly electricians will be required to wire computer networks and telecommunications. This program will prepare students to work in each of these applications of electricity.

Minimum credits	61
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (21 credits)**ADO 1: Write clearly, concisely and intelligibly (3 credits)***Take the following:*

ENG	131	Writing Experience I
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ADO 2: Speak clearly, concisely and intelligibly (3 credits)*Choose one of the following:*

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)*Take the following:*

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (4-5 credits)*Choose one of the following:*

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy and Physiology I
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3-4 credits)*Choose one of the following:*

ECN	231	Macroeconomics
ECN	232	Microeconomics
HIS	131	Western Civilization to 1555
HIS	132	Western Civilization 1555 to Present
HIS	231	Development of the US through the Civil War
HIS	232	Development of the US from the Civil War
HIS	235	20th Century History
PLS	141	American National Government
PSY	140	Introduction to Psychology
SOC	231	Principles of Sociology

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)*Choose one of the following:*

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically*Program courses meet this requirement.***ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)***Choose one of the following:*

HPF	160	Wellness
HPF	186	Weight Training and Wellness
HPF	277	Stress Management
HPF	283	Managing Stress and Holistic Health
PHL	236	Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success*Program courses meet this requirement.***ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures***Program courses, COM 231 or COM 240, meet this requirement.***ELECTRICIAN CORE REQUIREMENTS (40 credits)***Take the following:*

ELT	120	Circuit Analysis I
ELT	126	Circuit Analysis II
ELT	130	Electronics I
ELT	140	Introduction to Digital Electronics
ELT	150	Residential Wiring
ELT	151	Commercial Wiring
ELT	152	Industrial Wiring
ELT	215	Electrical Troubleshooting
ELT	220	Industrial Motion Control
ELT	250	Electrical Motors & Controls
ELT	260	Basic Programmable Controllers
ELT	261	Advanced PLC Programming
ELT	274	Electrician's National Code

ELECTRICIAN ADDITIONAL REQUIREMENTS

EMS 110 Advanced First Aid & American Heart CPR
or current Adult CPR and First Aid Certification

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Electrician – Certificate

(ELEC.CERT)

Electricians install and maintain electrical systems in residential construction and commercial buildings. They also work in manufacturing settings often servicing highly automated industrial processes. Increasingly electricians will be required to wire computer networks and telecommunications. This program will prepare students to work in each of these applications of electricity.

Minimum credits	45
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (7 credits)*Take the following:*

ENG	131	Writing Experience I
MAT	131	Intermediate Algebra or higher

ELECTRICIAN CORE REQUIREMENTS (38 credits)*Take the following:*

ELT	120	Circuit Analysis I
ELT	126	Circuit Analysis II
ELT	130	Electronics I
ELT	140	Introduction to Digital Electronics
ELT	150	Residential Wiring
ELT	151	Commercial Wiring
ELT	152	Industrial Wiring
ELT	215	Electrical Troubleshooting
ELT	220	Industrial Motion Control
ELT	250	Electrical Motors & Controls
ELT	260	Basic Programmable Controllers
ELT	274	Electrician's National Code

ADDITIONAL REQUIREMENTS

EMS 110 Advanced First Aid & American Heart CPR
or current Adult CPR and First Aid Certification

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Electrical Basics – Concentration (*ELEC.CON*)

Completion of this program provides a solid electrical foundation for the person seeking electrical or industrial maintenance mechanic training.

Minimum credits	16
Minimum cumulative GPA	2.0
Minimum grade in all courses.....	2.0
Minimum JC credits	15

REQUIRED COURSES (16 credits)*Take the following:*

ELT	120	Circuit Analysis I
ELT	126	Circuit Analysis II
ELT	150	Residential Wiring
ELT	152	Industrial Wiring
ELT	260	Basic Programmable Controllers

Electronic Technology/ ELT – Associate in Applied Science (*ETGE.AAS*)

Electronic technologists are employed in such fields as digital computer maintenance, voice and data communications, radio and television broadcasting, medical electronic instrumentation, high-tech manufacturing, research and development in laboratory settings. Students may also work to achieve A+ certification for employment as personal computer service professionals. A+ certification is the “journeyman’s card” for computer technologists, which is recognized by CompTIA. The non-profit Computing Technology Industry Association (CompTIA) is widely recognized as the standard for qualified computer service professionals.

Minimum credits	66
Minimum cumulative GPA	2.0
Minimum grade in all courses.....	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (22 credits)**ADO 1: Write clearly, concisely and intelligibly (3 credits)***Take the following:*

ENG	131	Writing Experience I
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ADO 2: Speak clearly, concisely and intelligibly (3 credits)*Choose one of the following:*

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)*Take the following:*

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (4-5 credits)*Choose one of the following:*

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Human Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy and Physiology I
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3-4 credits)*Choose one of the following:*

ECN	231	Macroeconomics
ECN	232	Microeconomics
HIS	131	Western Civilization to 1555
HIS	132	Western Civilization 1555 to Present
HIS	231	Development of the US through the Civil War
HIS	232	Development of the US from the Civil War
HIS	235	20th Century History
PLS	141	American National Government
PSY	140	Introduction to Psychology
SOC	231	Principles of Sociology

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)*Choose one of the following:*

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically*Program courses meet this requirement.***ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)***Choose one of the following:*

HPF	160	Wellness
HPF	186	Weight Training and Wellness
HPF	277	Stress Management
HPF	283	Managing Stress and Holistic Health
PHL	236	Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success*Program courses meet this requirement.***ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures***Program courses, COM 231 or COM 240, meet this requirement.***ELECTRONIC TECHNOLOGY RELATED REQUIREMENTS (7 credits)***Take the following:*

CIS	170	Programming C++ OR
CIS	160	Programming in Visual Basic.NET

Plus up to 4 credits from the following:

Any ELT, CIS or CNS course that best meets your educational goals

ELECTRONIC TECHNOLOGY CORE REQUIREMENTS (38 credits)*Take the following:*

CIS	101	Introduction to Computer Systems OR
CIS	201	Advanced Information Technologies
CIS	174	PC Repair/A+ Hardware Component
CIS	175	PC Repair/A+ Software Component
CIS	176	A+ Certification Exam Preparation
CNS	101	Network+/Networking Fundamentals
ELT	120	Circuit Analysis I
ELT	126	Circuit Analysis II
ELT	130	Electronics I
ELT	140	Introduction to Digital Electronics
ELT	250	Electric Motors & Controls
ELT	260	Basic Programmable Controllers

Electronic Technology/ELT – Certificate (ELTE.CERT)

Employment opportunities would include OEM product service and repair, repair and calibration technician, manufacturing maintenance, instrument technician and retail sales.

Minimum credits	36
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (7 credits)*Take the following:*

ENG	131	Writing Experience I
MAT	131	Intermediate Algebra or higher

RELATED REQUIREMENTS (3 CREDITS)*Take one from the following:*

CIS	160	Programming in Visual Basic.NET
CIS	170	Programming C++
ELT	250	Electric Motors & Controls
ELT	260	Basic Programmable Controllers

ELECTRONIC TECHNICIAN CORE REQUIREMENTS*(26 credits)**Take the following:*

CIS	101	Introduction to Computer Systems OR
CIS	201	Advanced Information Technologies
CIS	174	PC Repair/A+ Hardware Component
CIS	175	PC Repair/A+ Software Component
CIS	176	A+ Certification Exam Preparation
ELT	120	Circuit Analysis I
ELT	126	Circuit Analysis II
ELT	130	Electronics I
ELT	140	Introduction to Digital Electronics

Electronic Technology / Microcomputer – Associate in Applied Science (*ETMS.AAS*)

Electronic technologists are employed in such fields as digital computer maintenance, voice and data communications, radio and television broadcasting, medical electronic instrumentation, high-tech manufacturing, research and development in laboratory settings. Students may also work to achieve A+ certification for employment as personal computer service professionals. A+ certification is the "journeyman's card" for computer technologists, which is recognized by CompTIA. The non-profit Computing Technology Industry Association (CompTIA) is widely recognized as the standard for qualified computer service professionals.

Minimum credits	68
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (21 credits)**ADO 1: Write clearly, concisely and intelligibly (3 credits)***Take the following:*

ENG	131	Writing Experience I
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ADO 2: Speak clearly, concisely and intelligibly (3 credits)*Choose one of the following:*

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)*Take the following:*

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (4-5 credits)*Choose one of the following:*

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Human Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy and Physiology I
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3-4 credits)*Choose one of the following:*

ECN	231	Macroeconomics
ECN	232	Microeconomics
HIS	131	Western Civilization to 1555
HIS	132	Western Civilization 1555 to Present
HIS	231	Development of the US through the Civil War
HIS	232	Development of the US from the Civil War
HIS	235	20th Century History
PLS	141	American National Government
PSY	140	Introduction to Psychology
SOC	231	Principles of Sociology

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)*Choose one of the following:*

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically*Program courses meet this requirement.*

ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)*Choose one of the following:*

HPF	160	Wellness
HPF	186	Weight Training and Wellness
HPF	277	Stress Management
HPF	283	Managing Stress and Holistic Health
PHL	236	Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success*Program courses meet this requirement.***ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures***Program courses, CIS 231 or COM 240, meet this requirement.***MICROCOMPUTER RELATED REQUIREMENTS****(7 credits)***Take the following:*

CIS	160	Programming in Visual Basic .NET OR
CIS	170	Programming in C++

*And choose 4 credits from the following:**Any ELT, CIS or CNS courses that best meets your educational goals.***MICROCOMPUTER CORE REQUIREMENTS (40 credits)***Take the following:*

BUA	120	Human Relations in Business
CIS	101	Introduction to Computer Systems OR
CIS	201	Advanced Information Technologies
CIS	105	Windows® Workshop
CIS	106	Operating Systems: UNIX
CIS	107	Microsoft® DOS® Workshop
CIS	174	PC Repair/A+ Hardware Component
CIS	175	PC Repair/A+ Software
CIS	176	A+ Certification Exam Preparation
CIS	179	Network+ Certification Exam Preparation
CNS	101	Network+/Networking Fundamentals
ELT	120	Circuit Analysis I
ELT	126	Circuit Analysis II
ELT	130	Electronics
ELT	140	Introduction to Digital Electronics

Electronic Technology / Microcomputer – Certificate

(ETMS.CERT)

With this certificate, employment opportunities would include PC repair, staffing for help desk for a software manufacturer, PC service desk and retail sales.

Minimum credits	43
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (7 credits)*Take the following:*

ENG	131	Writing Experience I
MAT	131	Intermediate Algebra or higher

RELATED REQUIREMENTS (3 credits)*Take one of the following:*

CIS	160	Programming in Visual Basic.NET
CIS	170	Programming in C++

MICROCOMPUTER CORE REQUIREMENTS (33 credits)*Take the following:*

CIS	101	Introduction to Computer Systems OR
CIS	201	Advanced Information Technologies
CIS	105	Windows® Workshop
CIS	106	Operating Systems: UNIX
CIS	107	Microsoft® DOS® Workshop
CIS	174	PC Repair/A+ Hardware Component
CIS	175	PC Repair/A+ Software Component
CIS	176	A+ Certification Exam Preparation
CNS	101	Network+/Networking Fundamentals
ELT	120	Circuit Analysis I
ELT	126	Circuit Analysis II
ELT	130	Electronics
ELT	140	Introduction to Digital Electronics

Occupational Studies – Associate in Applied Science

(OCST.AAS)

This Associate in Applied Science is designed specifically for students who have completed an apprenticeship program and received a certificate of completion from the U.S. Department of Labor/Bureau of Apprenticeship and Training. Apprenticeship occupations accepted are carpenter, cement mason, structural draftsman, machine builder, machine repair and maintenance, millwright, wood model maker, mold maker (plaster and die cast), operating engineer, plumber, pipe fitter, tool and die maker. Other apprenticeship programs would need to be reviewed on a case-by-case for consideration by the lead faculty. The curriculum will provide students with a strong academic foundation and introduce them to new ideas in sustainability, business, entrepreneurship and computer systems.

Minimum credits	61
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (24 credits)

ADO 1: Write clearly, concisely and intelligibly

Take the following:

ENG	131	Writing Experience I
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ADO 2: Speak clearly, concisely and intelligibly

Choose one of the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning

Take the following:

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning

Choose one of the following:

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy and Physiology I

CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future

Choose one of the following:

ECN	231	Macroeconomics
ECN	232	Microeconomics
HIS	131	Western Civilization to 1555
HIS	132	Western Civilization 1555 to Present
HIS	231	Development of the US through the Civil War
HIS	232	Development of the US from the Civil War
HIS	235	20th Century History
PLS	141	American National Government
PSY	140	Introduction to Psychology
SOC	231	Principles of Sociology

ADO 6: Understand aesthetic experience and artistic creativity

Choose one of the following:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement.

ADO 8: Make responsible decisions in personal and professional contexts

Choose one of the following:

HPF	160	Wellness
HPF	186	Weight Training and Wellness
HPF	277	Stress Management
HPF	283	Managing Stress and Holistic Health
PHL	236	Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement.

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Choose one of the following:

ANT	131	Cultural Anthropology
ENG	236	Women in Changing Society
ENG	249	African-American Literature
ENG	257	World Literature
FRN	131	French I or higher
GEO	132	World Regions
GER	131	German I or higher
HIS	125	African-American History
PHL	243	World Religions
PLS	262	International Relations
MUS	130	Music of Non-Western Cultures
SOC	235	Minority Groups in America
SOC	236	Women in Changing Society
SOC	246	Marriage and Family
SPN	131	Spanish I or higher

OCCUPATIONAL STUDIES CORE REQUIREMENTS

(17 credits)

Take the following:

STM	101	Introduction to Sustainability
ENT	101	Entrepreneurship: Creating Your Own Job
CIS	101	Introduction to Computer Systems
ECM	101	eCommerce Fundamentals
BUA	100	Contemporary Business
ENG	232	Technical and Business Writing

OCCUPATIONAL STUDIES ELECTIVE REQUIREMENTS (20 credits)

Apprenticeship Certificate of Completion

APPRENTICESHIP INFORMATION

Apprenticeship programs are available in many trades in cooperation with an employer or a joint apprenticeship committee representing labor and management. The U.S. Department of Labor/Bureau of Apprenticeship and Training registers and monitors the programs to ensure quality in apprenticeship programs nationwide.

Apprenticeship training involves classroom and on-the-job training over a span of usually four years. The process of applying knowledge on the job provides the apprentice with the opportunity to develop the necessary skills for a particular trade.

Upon completion of all employer-specified coursework and the required hours of on-the-job instruction, the employer may recommend that the apprentice receive a completion certificate from the U.S. Department of Labor/Bureau of Apprenticeship and Training.

TRANSFER PROGRAMS**PRE-ARCHITECTURE**

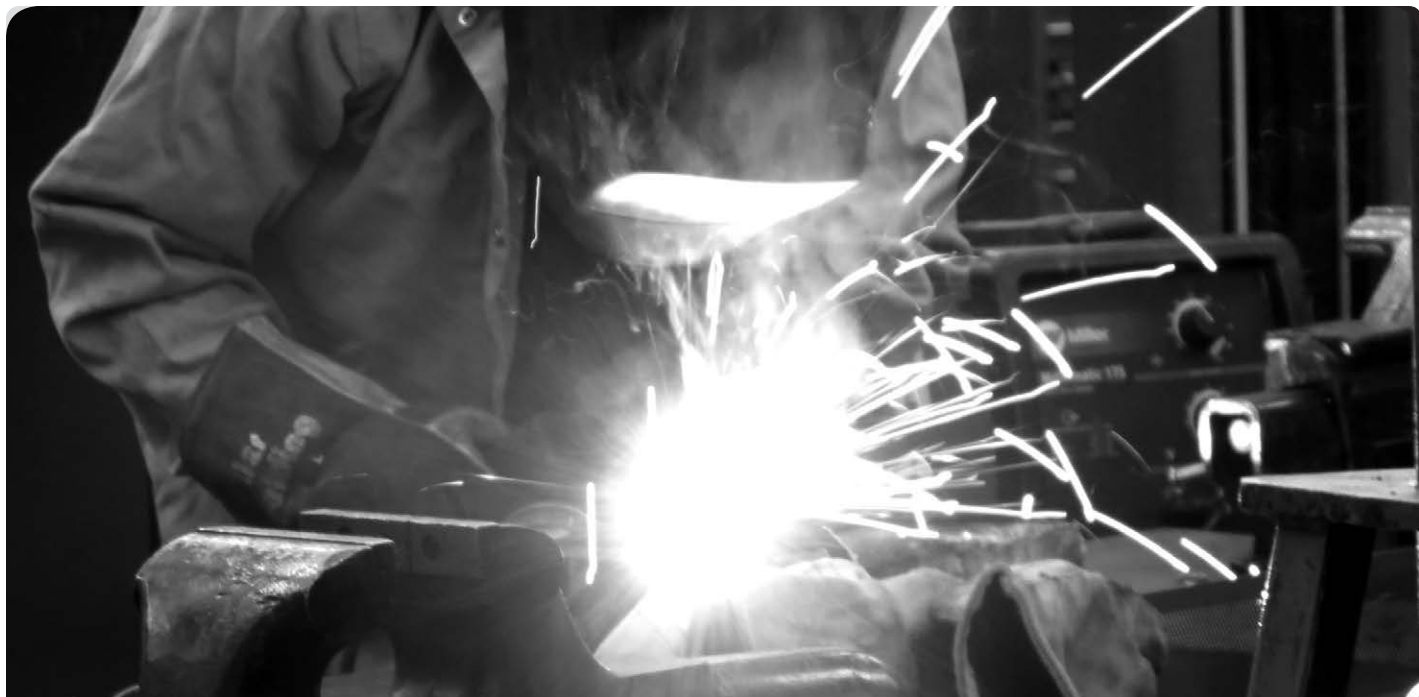
Architects design buildings and other structures. These buildings must be attractive as well as functional, safe and economical, and must suit the needs of the people who use them. Architects take all these things into consideration when they design buildings and other structures.

Architects provide a wide variety of professional services to individuals and organizations planning a construction project. They may be involved in all phases of development, from the initial discussion of general ideas with the client through the entire life of the facility. Their duties require a number of skills – design, engineering, managerial, communication and supervisory.

ENGINEERING

Engineers apply science, mathematics and professional judgment to solve technical problems in industry and society. Today engineers are expected to contribute more than their technical competence. They are concerned with the impact of their work on society.





Manufacturing and Industrial Technology Pathway

This pathway is designed to provide the hands-on and theoretical knowledge necessary to produce graduates that are properly trained and job-ready for the modern manufacturing industries. The various degrees within the pathway are high-demand, technical manufacturing disciplines. JC is in the process of phasing out previously-offered degrees and transitioning them to cover the newest technologies and meet the more rigorous technical expertise that employers are seeking in candidates. The new curricula has not yet been finalized as of this printing, but an overview of the degrees we are expecting to soon have in place are listed below. Please see a JC advisor for up-to-date information about manufacturing degrees.



Advanced Manufacturing – Associate in Applied Science (ADMA.AAS)

The Advanced Manufacturing Associate in Applied Science program prepares students for careers in the manufacturing field, or to enroll in the Bachelor of Science in Energy Production and Management. Students that enter this field can expect employment in the areas and job titles such as: welding, mechanical design, production management, process management, project management, system technicians, machinery repair, maintenance technicians and machine tool design.

Minimum credits	61
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	20

GENERAL EDUCATION REQUIREMENTS (26 credits)

ADO 1: Write clearly, concisely and intelligibly (3 credits)

ENG 131 Writing Experience I

ADO 2: Speak clearly, concisely and intelligibly (3 credits)

COM 231 Communication Fundamentals

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

MAT 131 Intermediate Algebra

ADO 4: Demonstrate scientific reasoning (4 credits)

PHY 131 Conceptual Physics

ADO 5: Understand human behavior and social systems, the principles which govern them and their implications for the present and future (3 credits)

Choose one of the following:

ECN 231 Macroeconomics

ECN 232 Microeconomics

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART 111 Art History: Prehistoric to 1400

ART 112 Art History: Renaissance to Present

ENG 210 Introduction to Film

ENG 246 Short Story & Novel

ENG 247 Poetry & Drama

ENG 252 Shakespeare

ENG 254 Children's Literature

ENG 255 American Literature - 19th Century

ENG 256 American Literature - 20th Century

MUS 131 Understanding Music

THR 116 Introduction to Theatre

THR 145 Fundamentals of Acting

ADO 7: Think Critically

Program courses meet this requirement.

ADO 8: Make responsible decisions in personal and professional contexts (3 credits)

Choose one of the following:

HPF 186 Weight Training and Wellness

PHL 236 Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success

Concentration courses meet this requirement

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures (3 credits)

Take one of the following:

HUM 131 Cultural Connections

ANT 131 Cultural Anthropology

PLS 262 International Relations

PHL 243 World Religions

PROGRAM CORE REQUIREMENTS (18 credits)

Take the following:

MFG 105 Blueprint Reading

MFG 200 Basic Measurement and Gauges

WLD 100 Fundamentals of Welding

ELT 105 Introduction to Electrical Systems

MFG 164 Basic Fabrication

Choose one of the following: (3 credits)

MFG 240 Introduction to Quality Systems

ALT 200 Introduction to Alternative Energy

ALT 160 Alternative Fuels

STM 101 Introduction to Sustainability

Complete all the courses listed for each concentration selected. You must select at least one (1) concentration.

WELDING FOCUS (17 credits)

Take the following:

WLD 110 MIG/TIG Welding

WLD 115 Aluminum/Stainless Steel Welding

MFG 160 Metallurgy

WLD 220 Welding Certification Preparation

Choose one of the following:

ELT 220 Automation and Motion Control

CAD 151 Introduction to Computer Assisted Drafting

INDUSTRIAL SYSTEMS FOCUS (17 credits)

Take the following:

MFG 185 Maintenance and Troubleshooting

MFG 190 Drive Components and Bearings

MFG 170 Hydraulics and Pneumatics

ELT 220 Automation and Controls

Choose one of the following:

ELT 140 Digital Circuits

CAD 151 Introduction to Computer Assisted Drafting

WLD 110 MIG/TIG Welding

CEM 141 General Chemistry

MANUFACTURING DESIGN FOCUS (17 credits)

Take the following:

MFG 160 Metallurgy

CAD 151 Introduction to Computer Assisted Drafting

MFG 115 Geometric Dimensioning and Tolerancing

CAD 251 Advanced CAD

MFG 261 Strength of Materials for Manufacturing

Choose one of the following:

ELT 220 Automation and Motion Control

MFG 190 Drive Components and Bearings

ELT 140 Digital Circuits

MAT 141 Precalculus

Industrial Systems - Advanced Manufacturing – Certificate (*ISAM.CERT*)

The Advanced Manufacturing Certificate prepares students for careers in the manufacturing field. Students that enter this field can expect employment in the areas and job titles such as: welding, mechanical design, production management, process management, project management, system technicians, machinery repair, maintenance technicians and machine tool design.

Minimum credits	33
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (7 credits)

ENG	131	Writing Experience I
MAT	131	Intermediate Algebra

PROGRAM CORE REQUIREMENTS (10 credits)

MFG	105	Blueprint Reading
MFG	164	Basic Fabrication
WLD	100	Fundamentals of Welding

INDUSTRIAL SYSTEMS FOCUS (16 credits)

Take the following:

ELT	105	Introduction to Electrical Systems
ELT	220	Automation and Controls
MFG	170	Hydraulics and Pneumatics
MFG	185	Maintenance and Troubleshooting
MFG	190	Drive Components and Bearings

Industrial Systems - Advanced Manufacturing – Skill Set (*ISAM.SSET*)

The Advanced Manufacturing Skill Set prepares students for introductory careers in the manufacturing field. Students that enter this field can expect employment in the areas and job titles such as; welding, mechanical design, production management, process management, project management, system technicians, machinery repair, maintenance technicians and machine tool design.

Minimum credits	14
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	14

Complete the following courses for the selected skill sets. In order to complete a skill set a student must show competency in MAT 020 and ENG 085. MFG 105 has MAT 020 level math embedded in the coursework. Students that have not placed at a MAT 020 competency level will have the opportunity to take the placement test again after completing MFG 105.

REQUIRED COURSES (14 credits)

Take the following:

ELT	105	Introduction to Electrical Systems
MFG	105	Blueprint Reading
MFG	170	Hydraulics and Pneumatics
MFG	185	Maintenance and Troubleshooting

Manufacturing Design - Advanced Manufacturing – Certificate (*MDAM.CERT*)

The Advanced Manufacturing Certificate prepares students for careers in the manufacturing field. Students that enter this field can expect employment in the areas and job titles such as: welding, mechanical design, production management, process management, project management, system technicians, machinery repair, maintenance technicians and machine tool design.

Minimum credits	31
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (7 credits)

ENG	131	Writing Experience I
MAT	131	Intermediate Algebra

PROGRAM CORE REQUIREMENTS (10 credits)

MFG	105	Blueprint Reading
MFG	164	Basic Fabrication
WLD	100	Fundamentals of Welding

MANUFACTURING DESIGN FOCUS (14 credits)

Take the following:

CAD	151	Introduction to Computer Assisted Drafting
CAD	251	Advanced CAD
MFG	115	Geometric Dimensioning and Tolerancing
MFG	160	Metallurgy
MFG	261	Strength of Materials for Manufacturing

Manufacturing Design - Advanced Manufacturing – Skill Set (MDAM.SSET)

The Advanced Manufacturing Skill Set prepares students for introductory careers in the manufacturing field. Students that enter this field can expect employment in the areas and job titles such as: welding, mechanical design, production management, process management, project management, system technicians, machinery repair, maintenance technicians and machine tool design.

Minimum credits	13
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	13

Complete the following courses for the selected skill sets. In order to complete a skill set a student must show competency in MAT 020 and ENG 085. MFG 105 has MAT 020 level math embedded in the coursework. Students that have not placed at a MAT 020 competency level will have the opportunity to take the placement test again after completing MFG 105.

REQUIRED COURSES (13 credits)

Take the following:

CAD	151	Introduction to Computer Assisted Drafting
CAD	251	Advanced CAD
MFG	105	Blueprint Reading
MFG	115	Geometric Dimensioning and Tolerancing

Choose one of the following

ELT	220	Automation and Controls
MFG	164	Basic Fabrication

Welding - Advanced Manufacturing – Certificate (WLAM.CERT)

The Advanced Manufacturing Certificate prepares students for careers in the manufacturing field. Students that enter this field can expect employment in the areas and job titles such as: welding, mechanical design, production management, process management, project management, system technicians, machinery repair, maintenance technicians and machine tool design.

Minimum credits	31
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (7 credits)

ENG	131	Writing Experience I
MAT	131	Intermediate Algebra

PROGRAM CORE REQUIREMENTS (10 credits)

MFG	105	Blueprint Reading
MFG	164	Basic Fabrication
WLD	100	Fundamentals of Welding

WELDING FOCUS (14 credits)

Take the following:

MFG	160	Metallurgy
WLD	110	MIG/TIG Welding
WLD	115	Aluminum/Stainless Steel Welding
WLD	220	Welding Certification Preparation

Welding - Advanced Manufacturing – Skill Set (WLAM.SSET)

The Advanced Manufacturing Skill Set prepares students for introductory careers in the manufacturing field. Students that enter this field can expect employment in the areas and job titles such as: welding, mechanical design, production management, process management, project management, system technicians, machinery repair, maintenance technicians and machine tool design.

Minimum credits	13
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits:	13

Complete the following courses for the selected skill sets. In order to complete a skill set a student must show competency in MAT 020 and ENG 085. MFG 105 has MAT 020 level math embedded in the coursework. Students that have not placed at a MAT 020 competency level will have the opportunity to take the placement test again after completing MFG 105.

REQUIRED COURSES (13 credits)

MFG	105	Blueprint Reading
WLD	100	Fundamentals of Welding
WLD	110	MIG/TIG Welding
WLD	115	Aluminum/Stainless Steel Welding



Health Sciences Career Pathway

This pathway includes careers related to the promotion of health as well as the treatment of injuries, conditions and diseases. This may include medicine, dentistry, nursing, therapy and rehabilitation, nutrition, fitness and hygiene, and animal health care.

Students in nursing or allied health programs that require clinical rotations at local health facilities may be required to submit to a drug test. If the student tests positive for illicit drugs he/she will be removed from the program. Criminal background checks may also be performed and may prevent admission if failed.

DEGREES/CERTIFICATES – ALLIED HEALTH

- Cardiac Sonography
- Emergency Medical Service, EMT
- General Sonography
- Health Studies
- Health Administration/Insurance Specialist
- Medical Assistant
- Medical Insurance Coder/Biller
- Pharmacy Technician
- Radiography
- Respiratory Care
- Vascular Sonography

DEGREES/CERTIFICATES – NURSING

- Nursing
- Nursing (LPN to ADN)
- Practical Nurse

CONCENTRATION

The “concentration” process is a building block approach to completing a trade certificate program. Students can choose to complete the concentration depending upon the level of skill and knowledge desired. Students can apply for a concentration upon completion of the required courses.

TRANSFER PROGRAMS IN HEALTH SCIENCES PATHWAY

The first two years of college education usually consist of general education courses, introductory courses in the major and/or program of study, and selected electives. Academic advisors will assist students in planning their transfer program. They can also provide transfer guide sheets indicating JC courses that meet the requirements of various programs of study at four-year colleges. Sample curricula for a few popular transfer programs are included:

- A joint program agreement in Medical Laboratory Technology between Jackson College and Kellogg Community College [AAS]
- Allied Health with Siena Heights University
- Dental Hygiene
- Medical Sciences [pre-medicine, pre-dentistry, pre-chiropractic]
- Physical Therapy
- Pre-Veterinary Science

NURSING

Nursing is a dynamic and changing field with broader employment opportunities than ever before. It is expected to have one of the largest number of new job openings in the next decade. Many future nurses will be employed in home health, long-term or ambulatory care, although nursing careers are still available in traditional settings such as hospitals, medical offices and clinics. Program options reflect the variety of career paths available to future nursing professionals.

JC PROGRAM CHOICES

- Nursing, ADN – Associate in Applied Science
- Nursing, LPN to ADN – Associate in Applied Science
- Practical Nurse – Certificate

Note: students who wish to begin a bachelor's degree in nursing and transfer to a four-year college or university should contact the university where they are planning to transfer.

Nursing – Associate in Applied Science (NURS.AAS)

The Associate in Applied Science, Nursing (ADN) program consists of integrated lectures, labs and clinicals conducted in approved clinical education affiliates. The program prepares students to demonstrate competency in providing nursing care in a variety of health care settings and for employment in the field of registered nursing. Candidates successfully completing the ADN program are eligible to apply for the licensing examination (NCLEX-RN) required for licensure as a registered professional nurse (RN).

Students must apply for admission to the nursing program, and must do so within the application deadlines. Admission to the nursing program is highly competitive and is not guaranteed. There are special admission requirements to the nursing program, and it is the student's responsibility to understand the requirements and adhere to them. Students must meet all admission requirements. Admission into the program is based on a competitive point system, a pre-admission standardized exam and completion of prerequisite courses. The selection process is subject to change. You must work with an academic advisor to plan your prerequisite course sequence and to make application to the nursing program. The advisor will explain the point system on the "ADN Selection Process-Worksheet."

Students are required to take the NCLEX Review Program as part of the curriculum in order to graduate. Multiple standardized exams are also required at various points. Most of JC's clinical sites are subject to ACT 303 of the Public Acts of 2002, amended April 1, 2006, of the State of Michigan which restricts persons with certain criminal convictions from having access to vulnerable populations.

Therefore, the agreements that JC has with these organizations require that as a condition of admission, all students will be subject to a fingerprint-based criminal background check, including an FBI check. Exclusions for convictions can range from one year to permanent exclusion. Questions should be directed to the security department.

In addition, all students must pass a drug screen to enter any nursing program at JC, as well as complete immunizations (as required for healthcare providers), meet technical standards, and complete a physical form. Following graduation, applicants for licensure as a nurse are also asked about criminal convictions and substance abuse, and this can impact the individual's ability to become licensed.

Prerequisites are:

- ENG 131 Writing Experience I
- MAT 131 Intermediate Algebra or higher (MAT 133 preferred)
- PSY 140 Introduction to Psychology
- BIO 253 Human Anatomy and Physiology I and BIO 254 Human Anatomy and Physiology II
- BIO 220 Microbiology

Applications are accepted for fall or winter admission. See an academic advisor for application deadlines. It is highly recommended that chemistry be taken prior to Human Anatomy & Physiology. All sciences and pharmacology must be taken within the last eight years. Nursing courses MUST be taken in sequence, with the exception of pharmacology. Students are required to take and pass the HESI RN Admission Assessment (A2) prior to admission.

Minimum credits	67
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum grades in BIO 253 and BIO 254	3.0
Minimum JC credits	41

GENERAL EDUCATION REQUIREMENTS (19 credits)

ADO 1: Write clearly, concisely and intelligibly (3 credits)

Take one of the following:

ENG	131	Writing Experience I
ENG	132	Writing Experience II

ADO 2: Speak clearly, concisely and intelligibly

Program courses, NUR 245 or NUR 270, meet this requirement.

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Take the following:

MAT	131	Intermediate Algebra or higher (MAT 133 Introduction to Probability & Statistics preferred)
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ADO 4: Demonstrate scientific reasoning (5-8 credits)*Take the following:*

BIO	155	Anatomy & Physiology OR
BIO	253	Human Anatomy and Physiology I AND
BIO	254	Human Anatomy and Physiology II

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (4 credits)*Take the following:*

PSY	140	Introduction to Psychology
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ADO 6: Understand aesthetic experience and artistic creativity (3 credits)*Choose one of the following:*

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically*Program courses meet this requirement.***ADO 8: Make responsible decisions in personal and professional contexts***Program course, NUR 101, meets this requirement.***ADO 9: Work productively with others, recognizing individual contributions to group success***Program courses meet this requirement.***ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures***Program courses, NUR 101 or NUR 277, meet this requirement.***NURSING RELATED REQUIREMENTS (7 credits)***Take the following:*

BIO	220	Microbiology
NUR	121	Pharmacology

NURSING CORE REQUIREMENTS (41 credits)*Take the following:*

NUR	101	Fundamentals of Nursing
NUR	245	Health Assessment
NUR	171	Supportive Educative Nursing
NUR	172	Pathophysiology
NUR	176	Family I – Maternal Nursing
NUR	270	Partially Compensatory
NUR	274	Leadership

NUR	275	Wholly Compensatory
NUR	276	Family II – Nursing of Children
NUR	277	Mental Health

*NUR 121 if not completed prior to admission into the program, MUST be taken during Semester I – concurrent with NUR 101.**It is highly recommended that general education courses be taken before the nursing course sequence if at all possible.***NOTE: nursing courses are assigned various labs and clinicals. Be sure to follow directions. The schedule is subject to change on short notice. Specific clinical sites and times cannot be guaranteed.**

The nursing department reserves the right to change the curriculum, policies and program requirements. The nursing program requirements are highly demanding and time consuming. Following admission, full-time employment is not recommended.

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Practical Nursing – Certificate (LPNU.CERT)

This program prepares students to provide direct nursing care, under supervision, to individuals in a variety of health care settings. The program consists of integrated lectures, labs and clinical experiences. Students who successfully complete the curriculum receive the certificate in practical nursing and are eligible to take the state licensing examination (NCLEX-PN) required for licensure as a practical nurse (LPN).

Students must apply for admission to the nursing program, and must do so within the application deadlines. Admission to the nursing program is highly competitive and is not guaranteed. There are special admission requirements to the nursing program, and it is the student's responsibility to understand the requirements and adhere to them. Students must meet all admission requirements. Admission into the program is based on a competitive point system, a pre-admission standardized exam (HESI RN Admission Assessment [A2]) and completion of prerequisite courses. The selection process is subject to change. Students must work with an academic advisor to plan the prerequisite course sequence and to make application to the nursing program. The advisor will explain the point system on the "Practical Nursing Selection Process-Worksheet."

The three-semester practical nursing program begins in March of each year and concludes the following May. There is a short break from mid-July to late August between Semester I and Semester II. Practical nursing classes are on a different course calendar than other classes. All science classes must be taken within the last eight years. Practical nursing courses must be taken in sequence. Students are required to take a licensure preparation course at JC as part of their curriculum in order to graduate.

Most of JC's clinical sites are subject to Act 303 of the Public Acts of 2002, amended April 1, 2006, of the State of Michigan which restricts persons with certain criminal convictions from having access to vulnerable populations. Therefore, the agreements that JC has with these organizations require that as a condition of admission, all students will be subject to a fingerprint-based criminal background check, including an FBI check. Exclusions for convictions can range from one year to permanent exclusion. Questions should be directed to the security department.

In addition, all students must pass a drug screen to enter any nursing program at JC, as well as complete immunizations (as required for healthcare providers), meet technical standards, and complete a physical form. Following graduation, applicants for licensure as a nurse are also asked about criminal convictions and substance abuse, and this can impact the individual's ability to become licensed.

Prerequisites are:

LPN	132	Medications OR
NUR	121	Pharmacology
LPN	141	Body Structure & Function OR
MOA	141	Body Structure & Function OR
BIO	253	Human Anatomy and Physiology I AND
BIO	254	Human Anatomy and Physiology II

Minimum credits	43
Minimum cumulative GPA	2.0
Minimum grades in all prerequisite and nursing classes*	2.0
Minimum JC credits	32

**Check "The Point System" on the "PN Selection Process Worksheet" regarding values of points for designated grades. Admission is competitive and based on grades.*

GENERAL EDUCATION REQUIREMENTS (7 credits)

Take the following:

ENG	131	Writing Experience I OR
ENG	132	Writing Experience II
MAT	131	Intermediate Algebra or higher
MAT	133	Introduction to Probability & Statistics (preferred)

PRACTICAL NURSING RELATED REQUIREMENTS (7 credits)

Take the following:

LPN	132	Medications OR
NUR	121	Pharmacology
LPN	141	Body Structure & Function OR
MOA	141	Body Structure & Function OR
BIO	253	Human Anatomy and Physiology I AND
BIO	254	Human Anatomy and Physiology II

PRACTICAL NURSING CORE REQUIREMENTS

(29 credits)

Take the following:

LPN	131	Foundations of Nursing
LPN	180	Nursing Care of Adults–1A
LPN	181	Nursing Care of Adults–1B
LPN	185	Nursing Care of Adults II
LPN	186	Maternal/Child Concepts
LPN	187	Role of the Practical Nurse

NOTE: nursing courses include various labs and clinicals, that must be taken in addition to the lectures. Be sure to follow directions each semester and consult with an academic advisor for guidance. This schedule is subject to change on short notice. Specific clinical sites and times cannot be guaranteed. The nursing department reserves the right to change the curriculum and program requirements as necessary. The nursing program requirements are highly demanding and time consuming. Following admission, full-time employment is not recommended.

Nursing – LPN To ADN – Associate in Applied Science (TNUR.AAS)

The Associate in Applied Science, Nursing – LPN to ADN program consists of integrated lectures, labs and clinicals conducted in approved clinical education affiliate settings. The program is designed to educate students to provide competent nursing care in a variety of health care settings and for employment in the field of registered nursing. Candidates who successfully complete the LPN to ADN programs are eligible to apply for the licensing examination (NCLEX-RN) required for licensure as a registered professional nurse (RN).

There are special admission requirements to the LPN to ADN nursing program, and it is the student's responsibility to understand the requirements and adhere to them. Students must apply for the program within published time frames. Students must meet with an academic advisor who will explain the program and admission process. Admission is not guaranteed and spaces are limited. The selection process is subject to change. Students must meet all admission requirements.

Candidates entering the LPN to ADN program must have a valid Michigan unencumbered LPN license and must pass the following competency exams: National League for Nursing (NLN) Foundations of Nursing, HESI RN Admission Assessment (A2), and Pharmacology NLN exam (or take the course).

Most of JC's clinical sites are subject to ACT 303 of the Public Acts of 2002, amended April 1, 2006, of the State of Michigan which restricts persons with certain criminal convictions from having access to vulnerable populations. Therefore, the agreements that JC has with these organizations require that as a condition of admission, all students will be subject to a fingerprint-based criminal background check, including an FBI check. Exclusions for convictions can range from one year to permanent exclusion. Questions should be directed to the security department.

In addition, all students must pass a drug screen to enter any nursing program at JC, as well as complete immunizations (as required for healthcare providers), meet technical standards, and complete a physical form. Following graduation, applicants for licensure as a nurse are also asked about criminal convictions and substance abuse, and this can impact the individual's ability to become licensed.

Minimum credits	60
Minimum cumulative GPA	2.0
Minimum grades in all courses	2.0
Minimum grade in BIO 155 or BIO 253.....	3.0
Minimum JC credits	29

It is highly recommended that chemistry be taken prior to Human Anatomy & Physiology (BIO 253 & 254). All sciences and NUR 121 must be taken within the last eight years. Nursing courses MUST be taken in sequence, with the exception of pharmacology. Students are required to take the NCLEX review course as part of the curriculum in order to graduate. An academic advisor must be consulted to apply to the program. The nursing program requirements are highly demanding and time consuming. Following admission, full-time employment is not recommended.

GENERAL EDUCATION REQUIREMENTS (19 credits)

ADO 1: Write clearly, concisely and intelligibly (3 credits)

Take one of the following:

ENG	131	Writing Experience I
ENG	132	Writing Experience II

ADO 2: Speak clearly, concisely and intelligibly

Program course, NUR 124, meets this requirement.

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Take the following:

MAT	131	Intermediate Algebra or higher
MAT	133	Introduction to Probability & Statistics (preferred)

ADO 4: Demonstrate scientific reasoning (5-8 credits)

Take the following:

BIO	253	Human Anatomy and Physiology I AND
BIO	254	Human Anatomy and Physiology II

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (4 credits)

Take the following:

PSY	140	Introduction to Psychology
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ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement.

ADO 8: Make responsible decisions in personal and professional contexts

Program courses meet this requirement.

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement.

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program course, NUR 277, meets this requirement.

NURSING (LPN TO ADN) RELATED REQUIREMENTS (7 credits)

Take the following:

BIO	220	Microbiology
NUR	121	Pharmacology*

NURSING (LPN TO ADN) CORE REQUIREMENTS (28 credits)

Take the following:

NUR	124	Transitions Bridge & Care of the Family
NUR	172	Pathophysiology

NUR	270	Partially Compensatory
NUR	274	Leadership
NUR	275	Wholly Compensatory
NUR	276	Family II–Nursing of Children
NUR	277	Mental Health

**May take before nursing sequence but must be completed prior to NUR 270, NUR 276, and NUR 277. Students may test out of NUR 121.*

It is highly recommended that general education courses be taken before the nursing course sequence if at all possible.

NOTE: nursing courses are assigned various labs and clinicals. Be sure to follow directions each semester you register. The schedule is subject to change on short notice. Specific clinical sites and times cannot be guaranteed. The nursing department reserves the right to change the curriculum and program requirements.

Allied Health General Studies – Associate in Applied Science (AHGS.AAS)

The Allied Health General Studies Associate in Applied Science program is specifically designed for those who have already earned some form of certification or licensure in an allied health profession and are looking to obtain an associate degree in order to further their education or employment opportunities. Certification or licensure, which must be submitted to determine eligibility, may meet up to 30 credits toward the allied health core requirements. Educational focus options are described below which will provide the opportunity to meet the 40 credit core requirement.

Minimum credits	72
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JCC credits	15

GENERAL EDUCATION REQUIREMENTS (22 credits)

ADO 1: Write clearly, concisely and intelligibly (3 credits)

Take the following:

ENG	131	Writing Experience I OR
ENG	132	Writing Experience II

ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Choose one of the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Choose one of the following:

MAT	131	Intermediate Algebra
MAT	133	Introduction to Probability & Statistics
MAT	135	Finite Mathematics
MAT	141	Pre-Calculus

ADO 4: Demonstrate scientific reasoning (4-5 credits)

Choose one of the following: If in the Science Focus Track the requirement may be met with an elective course. Please check for any prerequisite requirements.

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Human Anatomy & Physiology
BIO	161	General Biology I
BIO	254	Human Anatomy and Physiology II
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
BIO	220	Microbiology

ADO 5: Understand human behavior and social systems, the principles that govern them, and their implications for the present and future. (4 credits)

Take the following:

PSY	140	Introduction to Psychology
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ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry and Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre

ADO 7: Think critically

Met by certification/licensure

ADO 8: Make responsible decisions in personal and professional contexts

Met by certification/licensure

ADO 9: Work productively with others, recognizing individual contributions to group success

Met by certification/licensure

ADO10: Understand and respect the diversity and interdependence of the world's peoples and cultures.

Met by certification/licensure

ALLIED HEALTH RELATED REQUIREMENTS (10 credits)

CIS	101	Introduction to Computer Systems OR
CIS	201	Advanced Computer Technologies
MOA	120	Medical Terminology
MOA	141	Body Structure and Function OR
LPN	141	Body Structure and Function OR
BIO	132	Human Biology OR
BIO	155	Human Anatomy & Physiology OR
BIO	254	Human Anatomy and Physiology II

ALLIED HEALTH CORE REQUIREMENTS (40 credits)

****40 credits must come from approved certification/licensure and additional courses listed under Additional Requirements.**

CERTIFICATION/LICENSURE EQUIVALENTS

CMA(AAMA), RMA(AMT), and LPN = 30 credits

Medical Coder/Biller (CPC) = 18 credits

CMAS(AMT) or equivalent as approved = 12 credits

Nurse Aide Certification (CNA) = 6 credits

Phlebotomy or EKG Tech certification (credentialing body must be approved) = 6 credits

****Other allied health certifications may be approved on a case by case basis. Please see program director for approval.****

ADDITIONAL REQUIREMENTS TO MEET ALLIED HEALTH CORE REQUIREMENTS OF 40 CREDITS**Health Management Focus**

This focus would be for someone who is looking to gain more experience in health management to complement their current medical background. This may also be ideal for someone who may be continuing with a bachelor's degree in health management or human relations. You may choose any of the following to ensure you meet credit requirements. Please be aware that there may be prerequisite requirements for the courses listed below.

ACC	216	Financial Accounting Concepts OR
ACC	231	Principles of Accounting
BIO	140	Public Health and Disease
PHL	236	Ethics
HOC	201	Quality Improvement – Health Care
BUA	220	Principles of Management
BUA	120	Human Relations in Business
BUA	121	Leadership

Science Focus

This focus would be for someone who would like to obtain further education in the sciences. You may choose any of the following to ensure you meet credit requirements. Please be aware that there may be prerequisite requirements for the courses listed below.

BIO	140	Public Health and Disease
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy and Physiology I
BIO	254	Human Anatomy and Physiology II
CEM	132	Fundamentals of Organic & Biological Chemistry
CEM	142	General Chemistry II
CEM	241	Organic Chemistry I
CEM	242	Organic Chemistry II

Psychology / Human Behavior Focus

This focus would be for someone who may want to obtain further education in the area of psychology and social sciences. You may choose any of the following ensure you meet credit requirements. Please be aware that there may be prerequisite requirements for the courses listed below.

PSY	152	Social Psychology
PSY	161	Introduction to Counseling
PSY	222	Applied Behavior Analysis
PSY	225	Introduction to Group Therapy
PSY	245	Infancy and Childhood
PSY	251	Abnormal Psychology
PSY	252	Developmental Psychology
BUA	120	Human Relations in Business

Entrepreneurship Focus

This focus would be for someone looking to gain the skills and knowledge needed to open their own health-related business, such as an assisted living facility. Please be aware that there may be prerequisite requirements for the courses listed below.

ENT	101	Entrepreneurship: Creating Your Own Job
ENT	102	Entrepreneurial Marketing: Finding Your Niche
ENT	169	Business Plan
ACC	216	Financial Accounting Concepts OR
ACC	231	Principles of Accounting
BUA	220	Principles of Management

ADDITIONAL REQUIREMENT

EMS	110	Advanced First Aid & CPR OR Current First Aid & Healthcare Provider CPR
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Cardiac Sonography – Associate in Applied Science

(CSON.AAS)

A cardiac sonographer (echocardiographer) is the allied health professional who, after an extensive and comprehensive educational process, is qualified to perform an echocardiogram (ultrasound of the heart). The primary role of the cardiac sonographer is to obtain diagnostic recordings and measurements from the ultrasound image of the heart, including hemodynamic information. This individual assumes great responsibility for the performance of this exam. The techniques for obtaining the required images and recordings require great skill. A thorough understanding of cardiac anatomy, physiology, hemodynamics and pathophysiology is required.

The cardiac sonography program is an online program accredited by the Commission for Accreditation of Allied Health Education Programs (CAAHEP) in the United States. It is a program leading to an Associate in Applied Science degree. The curriculum consists of integrated didactic and clinical coursework with a minimum of 1,136 supervised clinical hours with an approved clinical education affiliate. This program is designed to prepare the student for employment as a cardiac sonographer with positions located in hospitals, medical clinics, and other diagnostic imaging facilities. Upon successful completion, students are eligible to apply to the ARDMS (American Registry for Diagnostic Medical Sonographers) for board examinations that will award them the RDCS (Registered Diagnostic Cardiac Sonographer) credential.

There are special admission requirements to the sonography programs, and it is the student's responsibility to understand the requirements and adhere to them. Entry into a program is competitive and based on a "point system." Point values are based on grades earned in prerequisite coursework and the interview process.

Applications are processed according to the following:

- Applications must be received by the Allied Health Office by August 31.
- Questionnaires will be mailed to eligible applicants.
- Completed questionnaires must be returned by the stated due date.
- DMS Admission Committee conducts interviews.
- Students are notified by mail of application/interview results.
- Accepted students begin winter semester.

General education prerequisites and related requirement courses must be completed before admission to the program.

Minimum credits	70
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum grade in BIO 132 or BIO 155 or BIO 253/254, HOC 130 and MOA 120	3.0
Minimum JC credits	33

GENERAL EDUCATION REQUIREMENTS (22 credits)

ADO 1: Write clearly, concisely and intelligibly (3 credits)

Take one of the following:

ENG	131	Writing Experience I
ENG	132	Writing Experience II

ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Choose one of the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Take the following:

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (4-8 credits)

Choose one of the following:

BIO	132	Human Biology OR
BIO	155	Human Anatomy & Physiology OR

BIO	253	Human Anatomy and Physiology I AND
BIO	254	Human Anatomy and Physiology II

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (4 credits)

Take the following:

PSY	140	Introduction to Psychology
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ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement.

ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)

Choose one of the following:

HPF	160	Wellness
HPF	186	Weight Training and Wellness
HPF	277	Stress Management
HPF	283	Managing Stress and Holistic Health
PHL	236	Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement.

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses, HOC 130 or COM 231 or COM 240, meet this requirement.

CARDIAC SONOGRAPHY RELATED REQUIREMENTS (16 credits)

Take the following:

DMS	100	Introduction to Diagnostic Imaging
DMS	104	Introduction to Sonographic Instrumentation
HOC	130	Introduction to Health Occupations
MOA	120	Medical Terminology
PHY	131	Conceptual Physics

CARDIAC SONOGRAPHY CORE REQUIREMENTS (33 credits)

Take the following:

DMS	140	Sonographic Orientation & Technique
DMS	141	Adult Echo I
DMS	142	Echo Clinical I
DMS	144	Cardiovascular Principles
DMS	148	Echo Clinical II
DMS	206	Sonographic Instrumentation
DMS	240	Adult Echo II
DMS	244	Echo Clinical III

EKG Technician – Skill Set (EKTE.SSET)

The EKG technician skill set prepares students for professional certification and employment in a variety of settings, such as hospital-based cardiology clinics, cardiac rehabilitation centers, doctor's offices, and emergency rooms. This is a great option for the student who would like to have patient contact without being involved in performing invasive procedures. Students may also choose to use this as a building block to enhance the skills that will be learned in another allied health or nursing degrees or to add to an already completed degree.

Minimum credits	11
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	11

REQUIRED COURSES (11 credits)

HOC	130	Introduction to Health Occupations
HOC	135	Electrocardiography Technician
MOA	141	Body Structure & Function OR
LPN	141	Body Structure & Function OR
BIO	132	Human Biology OR
BIO	155	Human Anatomy & Physiology OR
BIO	254	Human Anatomy and Physiology II

ADDITIONAL REQUIREMENT

EMS	110	Advanced First Aid & American Heart CPR OR Current Healthcare Provider CPR and Basic First Aid certification
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Emergency Medical Technology – Associate in Applied Science (EMMT.AAS)

The emergency medical technology program prepares students for employment as advanced emergency medical caregivers. Content areas are covered in lectures; practical skills are developed in laboratory settings; and, clinical applications are divided between prehospital and hospital rotations. A 250-hour, non-paid externship experience with a local ambulance company is the capstone course for completion of the program requirement.

The curriculum meets the requirements of the Michigan Department of Michigan Department of Community Health and needs to be taken in sequence. Each course prepares the student for the respective level of the state licensing examination.

Students are evaluated in three areas: content, practical skills and clinical performance. Students achieving an 80 percent or higher will receive a certificate of completion and be eligible for state licensure. Practical skills are graded on a pass/fail basis, and students must pass all practical exams to successfully complete each course. Clinical performance is evaluated by attendance and feedback from ambulance and hospital personnel along with the clinical facilitator. Attendance policies are regulated by the state. Upon successfully completing all college requirements, a student will qualify for an Associate in Applied Science.

Minimum credits	69
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum grade in all EMS courses	2.5
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (25 credits)**ADO 1: Write clearly, concisely and intelligibly (3 credits)***Take one of the following:*

ENG	131	Writing Experience I
ENG	132	Writing Experience II

ADO 2: Speak clearly, concisely and intelligibly (3 credits)*Choose one of the following:*

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)*Take the following:*

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (8-10 credits)*Choose one of the following groups:*

- | | | |
|-----|-----|---------------------------------------|
| BIO | 155 | Human Anatomy & Physiology AND |
| CEM | 131 | Fundamentals of Chemistry OR |
| CEM | 137 | Chemistry of Life OR |
| CEM | 141 | General Chemistry I |
- | | | |
|-----|-----|-------------------------------------------|
| BIO | 253 | Human Anatomy and Physiology I AND |
| BIO | 254 | Human Anatomy and Physiology II |

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (4 credits)*Take the following:*

PSY	140	Introduction to Psychology
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ADO 6: Understand aesthetic experience and artistic creativity (3 credits)*Choose one of the following:*

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature - 19th Century
ENG	256	American Literature - 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically*Program courses meet this requirement.***ADO 8: Make responsible decisions in personal and professional contexts***Program courses meet this requirement.***ADO 9: Work productively with others, recognizing individual contributions to group success***Program courses meet this requirement.***ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures***Program courses, COM 231 or COM 240, meet this requirement.***EMERGENCY MEDICAL TECHNOLOGY REQUIREMENTS (44 credits)***Take the following:*

EMS	122	EMT Basic Technology OR
EMS	150	EMT Intermediate Technology
EMS	160	Paramedic Advanced Practice: I
EMS	161	Paramedic Skill Lab: I
EMS	162	Paramedic Pharmacology: I
EMS	163	Paramedic Cardiology: I
EMS	164	Pediatric Advanced Life Support
EMS	166	Paramedic Clinical: I
EMS	170	Paramedic Advanced Practice: II
EMS	171	Paramedic Skill Lab: II
EMS	172	Paramedic Pharmacology: II
EMS	173	Paramedic Cardiology: II
EMS	174	Paramedic Advanced Practice: III
EMS	176	Paramedic Clinical: II
EMS	245	Paramedic Clinical Internship

Emergency Medical Technology– Basic – Concentration (EMMT.CON)

The basic emergency medical technology program is a Michigan Department of Community Health-approved program. This program provides the information and experience necessary to prepare the student to sit for the National Registry Basic EMT Certification exam. Topics include: legal responsibilities, anatomy, physiology, patient assessment, management of various emergency situations, extrication, and current standards for EMTs in the field. Students will also participate in scenario-based education and computer-based testing and scenarios to reinforce skills learned within these areas. Students must complete a minimum of four 12-hour experiences in the hospital emergency room setting and with a pre-hospital life support agency. Laboratory and clinical experiences are included.

Minimum credits	28
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum grade in EMS 122	2.5
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (7 credits)*Take the following:*

ENG	131	Writing Experience I
MAT	131	Intermediate Algebra or higher

CORE REQUIREMENTS (21-24 credits)

BIO	155	Human Anatomy & Physiology OR
BIO	253	Human Anatomy & Physiology I AND
BIO	254	Human Anatomy & Physiology II
CEM	131	Fundamentals of Chemistry OR
CEM	137	Chemistry of Life OR
CEM	141	General Chemistry I
EMS	122	EMT Basic Technology
EMS	164	Pediatric Advanced Life Support
EMS	170	Paramedic Advanced Practice: II
EMS	171	Paramedic Skill Lab: II
EMS	172	Paramedic Pharmacology: II
EMS	173	Paramedic Cardiology: II
EMS	174	Paramedic Advanced Practice: III
EMS	176	Paramedic Clinical: II
EMS	245	Paramedic Clinical Internship

Emergency Medical Technology – Basic – Skill Set (EMMT.SSET)

The basic emergency medical technician program is a Michigan Department of Community Health-approved program. This program provides the information and experience necessary to prepare the student to sit for the National Registry Basic EMT Certification exam. Topics include: legal responsibilities, anatomy, physiology, patient assessment, management of various emergency situations, extrication, and current standards for EMTs in the field. Students will also participate in scenario-based education and computer-based testing and scenarios to reinforce skills learned within these areas. Students must complete a minimum of four 12-hour experiences in the hospital emergency room setting and with a pre-hospital life support agency. Laboratory and clinical experiences are included.

Minimum credits	12
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum grade in EMS 122	2.5
Minimum JC credits	15

REQUIRED COURSES (12 credits)*Take the following:*

EMS	122	EMT Basic Technology
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General Sonography – Associate in Applied Science (GSON.AAS)

A sonographer is the allied health professional who, for diagnostic purposes, uses high frequency sound waves to create cross sectional images of the patient's anatomy. Sonographers work in professional harmony with both the radiologist and the clinical physician. Sonographers are required to demonstrate a great deal of independent judgment.

The general sonography program is an online program accredited by the Commission for Accreditation of Allied Health Educational Programs (CAAHEP) in the United States. It is a program leading to an Associate in Applied Science degree. The curriculum consists of integrated educational and clinical course work with a minimum of 1,350 supervised clinical hours in an approved clinical education affiliate. The program prepares students for employment in two specialties (abdomen/superficial structures and obstetrics/gynecology) within the field of general sonography; positions are located within hospitals, medical clinics, and other diagnostic imaging institutions. Upon successful completion, students are eligible to apply for the American Registry for Diagnostic Medical Sonography (ARDMS) exams in Physics and Instrumentation, Abdomen and Obstetrics/Gynecology.

There are special admissions requirements to the sonography programs, and it is the student's responsibility to understand the requirements and adhere to them. Entry into a program is competitive and based on a "point system." Point values are based on grades earned in prerequisite coursework and the interview process.

Applications are processed according to the following:

- Applications must be received by the Allied Health Office by January 31.
- DMS Admission Committee conducts consultations.
- Students are notified by mail of application/consultations results.

Accepted students begin spring semester. General education prerequisites and related requirement courses must be completed before admission to the program.

Minimum credits	78
Minimum cumulative GPA	2.0
Minimum grade in BIO 132 or BIO 155 or BIO 253/254, HOC 130 and MOA 120	3.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (21 credits)**ADO 1: Write clearly, concisely and intelligibly (3 credits)***Take one of the following:*

ENG	131	Writing Experience I
ENG	132	Writing Experience II

ADO 2: Speak clearly, concisely and intelligibly (3 credits)*Choose one of the following:*

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)*Take the following:*

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (4-8 credits)*Choose one of the following:*

BIO	132	Human Biology OR
BIO	155	Human Anatomy & Physiology OR
BIO	253	Human Anatomy and Physiology I AND
BIO	254	Human Anatomy and Physiology II

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (4 credits)*Take the following:*

PSY	140	Introduction to Psychology
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ADO 6: Understand aesthetic experience and artistic creativity (3 credits)*Choose one of the following:*

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically*Program courses meet this requirement.***ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)***Choose one of the following:*

HPF	160	Wellness
HPF	186	Weight Training and Wellness
HPF	277	Stress Management
HPF	283	Managing Stress and Holistic Health
PHL	236	Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success*Program courses meet this requirement.***ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures***Program courses, HOC 130 or COM 231 or COM 240, meet this requirement.***GENERAL SONOGRAPHY RELATED REQUIREMENTS (16 credits)***Take the following:*

DMS	100	Introduction to Diagnostic Imaging
DMS	104	Introduction to Sonographic Instrumentation
HOC	130	Introduction to Health Occupations
MOA	120	Medical Terminology
PHY	131	Conceptual Physics or Radiologic Physics or equivalent

GENERAL SONOGRAPHY CORE REQUIREMENTS (40 credits)*Take the following:*

DMS	101	Sonographic Orientation
DMS	105	Sonographic Techniques
DMS	122	Clinical Experience I
DMS	200	Abdomen and Small Parts Sonography
DMS	201	Obstetric and Gynecologic Sonography
DMS	206	Sonographic Instrumentation
DMS	212	Comprehensive Sonography
DMS	223	Clinical Experience II
DMS	224	Clinical Experience III

Health Administration/ Insurance Specialist – Associate in Applied Science

(HAIS.AAS)

The health administration/insurance specialist program is a continuation of the Medical Insurance Coder Biller Certificate. This program provides students with additional coding and billing training and practicum experience, along with instruction and skills in health administration. Students of this program may find positions in insurance coding or billing, medical/health administration, or may choose to use this degree as a bridge to a bachelor's-level health administration degree.

Minimum credits	73
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum grades in ACC 115, BUA 221, MOA 240, MOA 241, MOA 242, MIC 101, MIC 150, MIC 201, MIC 211, and CIS 210	2.5
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (22 credits)**ADO 1: Write clearly, concisely and intelligibly (3 credits)***Take the following:*

ENG	131	Writing Experience I OR
ENG	132	Writing Experience II

ADO 2: Speak clearly, concisely and intelligibly (3 credits)*Take one of the following:*

COM	231	Communication Fundamentals
COM	240	Interpersonal Communications
COM	250	Intercultural Communications

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)*Take the following:*

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (4-5 credits)*Choose one of the following: If in the Science Focus Track the requirement may be met with an elective course. Please check for any prerequisite requirements.*

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Human Anatomy & Physiology
BIO	161	General Biology I
BIO	254	Human Anatomy and Physiology II
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
BIO	220	Microbiology

ADO 5: Understand human behavior and social systems, the principles that govern them, and their implications for the present and future. (4 credits)*Take the following:*

PSY	140	Introduction to Psychology
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ADO 6: Understand aesthetic experience and artistic creativity (3 credits)*Choose one of the following:*

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry and Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre

ADO 7: Think critically*Program courses meet this requirement.***ADO 8: Make responsible decisions in personal and professional contexts***Program courses meet this requirement.***ADO 9: Work productively with others, recognizing individual contributions to group success***Program courses meet this requirement.***ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures.***Program courses meet this requirement.***HEALTH ADMINISTRATION/INSURANCE SPECIALIST RELATED REQUIREMENTS (24 credits)***Take the following:*

ACC	115	Payroll Accounting
ACC	216	Financial Accounting Concepts OR
ACC	231	Principles of Accounting
BIO	140	Public Health and Disease
BUA	221	Human Resources Management
CIS	210	Office Administration Systems
HOC	132	Pharmacology for Allied Health Professions OR
NUR	121	Pharmacology
MOA	120	Medical Terminology

And choose from the following (cannot be the same as ADO 4 science requirement)

MOA	141	Body Structure and Function OR
LPN	141	Body Structure and Function OR
BIO	132	Human Biology OR
BIO	155	Human Anatomy & Physiology OR
BIO	254	Human Anatomy and Physiology II

HEALTH ADMINISTRATION/INSURANCE SPECIALIST CORE REQUIREMENTS (27 credits)*Take the following:*

MOA	112	Medical Law and Ethics
MOA	240	Medical Office Procedures
MOA	241	Principles of Medical Coding and Billing
MOA	242	Advanced Medical Billing
MIC	101	ICD-CM Coding
MIC	150	CPT Coding
MIC	201	Billing Systems
MIC	211	Advanced Coding
MIC	250	Coder/Biller Practicum

Medical Assistant – Associate in Applied Science

(MEDA.AAS)

The Medical Assistant Associate in Applied Science program prepares the student for an entry-level position as a medical assistant in a medical office, clinic, hospital or other health care facility. Clinical (diagnostic and treatment), administrative (communication and business) skills and transdisciplinary knowledge and skills are included in the course work. A 160-hour non-paid externship experience with a licensed health care practitioner is the capstone course.

The JC certificate medical assistant program is accredited by the Commission on Accreditation of Allied Health Education Programs (www.caahep.org) upon the recommendation of the Medical Assisting Education Review Board (MAERB), Commission on Accreditation of Allied Health Education Programs, 1362 Park Street, Clearwater, FL 33756. Phone: 727.210.2350.

Upon completion, the student becomes eligible for the AAMA Medical Assistant Certification exam to be a Certified Medical Assistant [CMA (AAMA)]. The medical assistant certificate program and completion of the general education requirements listed qualifies the student for an Associate in Applied Science – Medical Assistant. Students are welcome to enter this program in any semester, but must meet prerequisite course and grade level requirements to proceed in the program and qualify for MOA 252 Medical Assistant Clinical Practicum.

Minimum credits	67
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum grade required in MOA 114, MOA 116, MOA 120, MOA 214, MOA 216, MOA 240, MOA 241, MOA 251 and MOA 252	2.5
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (21 credits)

ADO 1: Write clearly, concisely and intelligibly (3 credits)

Take one of the following:

ENG	131	Writing Experience I
ENG	132	Writing Experience II

ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Choose one of the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Take the following:

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (4-5 credits)

Choose one of the following:

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Human Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy and Physiology I
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry I
GEL	109	Earth Science
GEL	160	Introduction to Geology
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (4 credits)

Take the following:

PSY	140	Introduction to Psychology
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ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement.

ADO 8: Make responsible decisions in personal and professional contexts

Program course, MOA 216, meets this requirement.

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement.

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses, MOA 214, COM 231 or COM 240, meet this requirement.

MEDICAL ASSISTANT RELATED REQUIREMENTS

(9 credits)

Take the following:

BIO	140	Public Health and Disease
CIS	101	Introduction to Computer Systems OR
CIS	201	Advanced Computer Technologies
HOC	132	Pharmacology for Allied Health Professions

MEDICAL ASSISTANT CORE REQUIREMENTS

(37 credits)

Take the following:

MOA	112	Medical Law & Ethics
MOA	114	Intro to Clinical Procedures
MOA	116	Physical Exams & Diagnostic Testing
MOA	120	Medical Terminology
MOA	145	Nutrition
MOA	214	Specialty Exams and Treatments
MOA	216	Surgical Procedures and Lab Testing
MOA	240	Medical Office Procedures
MOA	241	Principles of Medical Coding and Billing
MOA	251	Medical Assistant Capstone
MOA	252	Medical Assistant Clinical Practicum

And choose from the following list (cannot be same as ADO 4 science requirement)

MOA	141	Body Structure & Function OR
BIO	132	Human Biology OR
BIO	155	Human Anatomy & Physiology OR
BIO	253	Human Anatomy and Physiology I AND
BIO	254	Human Anatomy and Physiology II OR
LPN	141	Body Structure & Function

MEDICAL ASSISTANT ADDITIONAL REQUIREMENTS

EMS	110	Advanced First Aid & American Heart CPR or current Healthcare Provider CPR and Basic First Aid certification
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Medical Assistant – Certificate (MEDA.CERT)

The Medical Assistant Certificate program prepares the student for an entry-level position as a medical assistant in a medical office, clinic, hospital or other health care facility. Clinical (diagnostic and treatment), administrative (communication and business) skills and transdisciplinary knowledge and skills are included in the course work. A 160-hour nonpaid externship experience with a licensed health care practitioner is the capstone course.

Upon successful completion of this program, the student is eligible for a professional credential by passing the American Association of Medical Assistant (AAMA) examination to become a Certified Medical Assistant [CMA (AAMA)]. The JC certificate medical assistant program is accredited by the Commission on Accreditation of Allied Health Education Programs (www.caahep.org) upon the recommendation of the Medical Assisting Education Review Board (MAERB), Commission on Accreditation of Allied Health Education Programs, 1362 Park Street, Clearwater, FL 33756. Phone: 727.210.2350.

Students are welcome to enter this program in any semester, but must meet prerequisite course and grade level requirements to proceed in the program and qualify for MOA 252 Medical Assistant Clinical Practicum.

Minimum credits	54
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum grade in MOA 114, MOA 116, MOA 120, MOA 214, MOA 216, MOA 240, MOA 241, MOA 251 and MOA 252	2.5
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (11 credits)

Take the following:

ENG	131	Writing Experience I OR
ENG	132	Writing Experience II
MAT	131	Intermediate Algebra or higher
PSY	140	Introduction to Psychology

RELATED REQUIREMENTS (6 credits)

Take the following:

CIS	101	Introduction to Computer Systems OR
CIS	201	Advanced Computer Technology
HOC	132	Pharmacology for Allied Health Professions

MEDICAL ASSISTANT CORE REQUIREMENTS

(37 credits)

Take the following:

MOA	112	Medical Law and Ethics
MOA	114	Intro to Clinical Procedures
MOA	116	Physical Exams & Diagnostic Testing
MOA	120	Medical Terminology
MOA	141	Body Structure & Function OR
BIO	155	Human Anatomy & Physiology OR
BIO	253	Human Anatomy and Physiology I AND
BIO	254	Human Anatomy and Physiology II OR
LPN	141	Body Structure & Function
MOA	145	Nutrition
MOA	214	Specialty Exams and Treatments

MOA	216	Surgical Procedures and Lab Testing
MOA	240	Medical Office Procedures
MOA	241	Principles of Medical Coding and Billing
MOA	251	Medical Assistant Capstone
MOA	252	Medical Assistant Clinical Practicum

MEDICAL ASSISTANT ADDITIONAL REQUIREMENTS

EMS	110	Advanced First Aid & American Heart CPR or current Healthcare Provider CPR and Basic First Aid certification
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Medical Office Support – Concentration (*MEOS.CON*)

The Medical Office Support Concentration prepares students to provide administrative support in various health care settings such as hospitals, medical offices or outpatient clinics, insurance companies, and other private and public sector healthcare settings. This is the perfect option for the student who would like to have patient contact without being involved in performing invasive or clinical procedures or for the student who would like to enter the workforce while continuing their education in another allied health or nursing program.

Minimum credits	28
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum grades in MOA 114, MOA 120	2.5
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (3 credits)

Take one of the following:

ENG	131	Writing Experience I
ENG	132	Writing Experience II

MEDICAL OFFICE SUPPORT RELATED REQUIREMENTS (6 credits)

Take the following:

BUA	130	Customer Service
CIS	101	Introduction to Computer Technologies OR
CIS	201	Advanced Computer Technologies

MEDICAL OFFICE SUPPORT CORE REQUIREMENTS (19 credits)

MOA	112	Medical Law and Ethics
MOA	114	Introduction to Clinical Procedures
MOA	120	Medical Terminology
MOA	141	Body Structure & Function OR
BIO	155	Human Anatomy & Physiology OR

BIO	253	Human Anatomy and Physiology I AND
BIO	254	Human Anatomy and Physiology II OR
LPN	141	Body Structure & Function
MOA	240	Medical Office Procedures
MOA	241	Principles of Medical Coding and Billing

ADDITIONAL REQUIREMENT

EMS	110	Advanced First Aid & CPR or current First Aid & Healthcare Provider CPR
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RECOMMENDED COURSES (Not required for degree)

ACC	115	Payroll Accounting
ACC	216	Financial Accounting Concepts
BUA	121	Leadership
CIS	210	Office Administration Systems
PSY	140	Introduction to Psychology
SPN	111	Conversational Spanish I
SPN	112	Conversational Spanish II

Medical Insurance Coder/ Biller – Certificate (*MICB.CERT*)

The Medical Insurance Coder/Biller Certificate program prepares the student to work in a medical office, clinic, surgical center, emergency center, or hospital. Emphasis is placed on: interpersonal, written and oral communication; business math; medical terminology; use of computers; medical financial management, disease conditions, diagnostic and procedure coding and billing.

Minimum credits	48
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum grades in ACC 216, MOA 241, MOA 242, MIC 101, MIC 150, MIC 201, and CIS 101	2.5
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (10 credits)

ENG	131	Writing Experience I OR
ENG	132	Writing Experience II
COM	231	Communication Fundamentals OR
COM	240	Interpersonal Communication
MAT	131	Intermediate Algebra or higher

MEDICAL INSURANCE CODER/BILLER RELATED REQUIREMENTS (20 credits)

Take the following:

ACC	216	Financial Accounting Concepts OR
ACC	231	Principles of Accounting
CIS	101	Introduction to Computer Systems OR
CIS	201	Advanced Computer Technologies
MOA	120	Medical Terminology
MOA	240	Medical Office Procedures
NUR	121	Pharmacology OR
HOC	132	Pharmacology for Allied Health Professions

And take one of the following

MOA	141	Body Structure & Function OR
BIO	132	Human Biology OR
BIO	155	Human Anatomy & Physiology OR
BIO	253	Human Anatomy and Physiology I AND
BIO	254	Human Anatomy and Physiology II OR
LPN	141	Body Structure & Function

MEDICAL INSURANCE CODER/BILLER CORE REQUIREMENTS (18 credits)

Take the following:

MOA	112	Medical Law and Ethics
MOA	241	Principles of Medical Coding and Billing
MOA	242	Advanced Medical Billing
MIC	101	ICD-CM Coding
MIC	150	CPT Coding
MIC	201	Billing Systems

Phlebotomy Technician – Skill Set (PHLB.SSET)

The Phlebotomy Technician Skill Set prepares students for professional certification and employment in a variety of settings, such as medical offices, hospitals or medical and diagnostic laboratories. Students may also choose to use this as a building block to enhance the skills that will be learned in another Allied Health or Nursing degree or to add to an already completed degree.

Prerequisite requirements: ENG 085 or higher. MAT 020 or higher.

Minimum credits	11
Minimum cumulative GPA:	2.0
Minimum grade in all courses	2.0
Minimum JC credits:	11

PHLEBOTOMY TECHNICIAN RELATED REQUIREMENTS (7 credits)

Take the following:

CIS	101	Introduction to Computer Technologies OR
CIS	201	Advanced Computer Technologies
MOA	141	Body Structure & Function OR
LPN	141	Body Structure & Function OR
BIO	132	Human Anatomy OR
BIO	155	Human Anatomy & Physiology OR
BIO	254	Human Anatomy & Physiology II

PHLEBOTOMY TECHNICIAN CORE REQUIREMENT (4 credits)

Take the following:

HOC	145	Phlebotomy Technician
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ADDITIONAL REQUIREMENT

First Aid & Healthcare Provider CPR

Pharmacy Technician – Associate in Applied Science (PHTE.AAS)

The Pharmacy Technician Associate in Applied Science program prepares the student for the skills necessary for a pharmacy technician position in a retail pharmacy or hospital. Emphasis is placed on: interpersonal, written and oral communication; health math; medical terminology; use of computers; knowledge and accuracy in dispensing and control of drugs. Upon successful completion, students are prepared to take the Pharmacy Technician Certification Board (PTCB Exam) a National Certification Exam.

Minimum credits	61
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum grades in CEM 131, CIS 101 or CIS 201, MOA 120, HOC 132 or NUR 121, HOC 140, HOC 202	3.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (28 credits)

ADO 1: Write clearly, concisely and intelligibly (6 credits)

Take the following:

ENG	131	Writing Experience I OR
ENG	132	Writing Experience II
ENG	232	Technical Business Writing

ADO 2: Speak clearly, concisely and intelligibly (3 credits)*Choose one of the following:*

COM	231	Communication Fundamentals OR
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)*Take the following:*

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (4-5 credits)*Choose one of the following:*

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Anatomy & Physiology
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy and Physiology I
BIO	254	Human Anatomy and Physiology II

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (4 credits)*Take the following:*

PSY	140	Introduction to Psychology
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ADO 6: Understand aesthetic experience and artistic creativity (3 credits)*Choose one of the following:*

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically*Program courses meet this requirement.***ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)***Choose from the following:*

HPF	160	Wellness
HPF	186	Weight Training and Wellness
HPF	277	Stress Management
HPF	283	Managing Stress and Holistic Health
PHL	236	Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success*Program courses meet this requirement.***ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures (3 credits)***Choose one of the following:*

ANT	131	Cultural Anthropology
ENG	236	Women in Changing Society
ENG	249	African-American Literature
ENG	257	World Literature
HIS	125	African-American History
PHL	243	World Religions
SOC	235	Minority Groups in America
SOC	236	Women in Changing Society

PHARMACY TECHNICIAN RELATED REQUIREMENTS (20 credits)*Take the following:*

BUA	130	Customer Service OR
HOC	202	Introduction to Health Informatics
CEM	131	Fundamentals of Chemistry
CIS	101	Introduction to Information Technologies OR
CIS	201	Advanced Information Technologies
MOA	120	Medical Terminology
STM	101	Introduction to Sustainability

And choose from the following list (cannot be same as ADO 4 science requirement)

MOA	141	Body Structure & Function OR
BIO	132	Human Biology OR
BIO	155	Human Anatomy & Physiology OR
BIO	253	Human Anatomy and Physiology I AND
BIO	254	Human Anatomy and Physiology II OR
LPN	141	Body Structure & Function

PHARMACY TECHNICIAN CORE REQUIREMENTS (13 credits)*Take the following:*

HOC	130	Introduction to Health Occupations
HOC	140	Pharmacy Tech Concepts and Calculations
MOA	145	Normal/Therapeutic Nutrition
NUR	121	Pharmacology OR
HOC	132	Pharmacology for Allied Health Professions

Radiography – Associate in Applied Science (RADLAAS)

A radiographer is the allied health professional who uses ionizing radiation to image patients in hospitals and various health clinical settings. Radiographers perform general x-ray imaging of the body and may also go on to perform advanced imaging procedures such as CT, MRI, mammography and more.

It is a two-year program leading to an Associate in Applied Science degree. The curriculum consists of integrated didactic and clinical course work in an approved clinical education affiliate. The program is designed to prepare the student for employment in the field of diagnostic radiography. Positions are located within hospitals, medical clinics and other diagnostic imaging institutions. Upon successful completion, students are eligible to write the American Registry of Radiological Technologists (ARRT) exams. Satisfactory completion of the ARRT board certifying exams allows the radiographer to use the initials of R.T. (R), Registered Technologist (Radiography).

There are special admission requirements to the radiography programs, and it is the student's responsibility to understand the requirements and adhere to them. Entry into a program is competitive and based on a "point system." Point values are based on grades earned in prerequisite coursework and the interview process.

Applications are processed according to the following:

- Applications must be received by the Allied Health Office by January 31.
- Radiography Admission Committee conducts interviews.
- Students are notified by mail of application/interview results.
- Accepted students begin spring semester.

BIO 132 or BIO 155 or BIO 253 and BIO 254, DMS 100, HOC 130 and MOA 120 must be successfully completed before applying to the program.

Minimum credits	88
Minimum cumulative GPA	2.0
Minimum grade in BIO 132 or BIO 155 or BIO 253/254, DMS 100, HOC 130 and MOA 120	3.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (22 credits)

ADO 1: Write clearly, concisely and intelligibly (3 credits)

Take one of the following:

ENG	131	Writing Experience I
ENG	132	Writing Experience II

ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Choose one of the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Take the following:

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (4-8 credits)

Choose from the following:

BIO	132	Human Biology OR
BIO	155	Anatomy & Physiology OR
BIO	253	Human Anatomy and Physiology I AND
BIO	254	Human Anatomy and Physiology II

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (4 credits)

Take the following:

PSY	140	Introduction to Psychology
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ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement.

ADO 8: Make responsible decisions in personal and professional contexts (3 credits)

Take the following:

PHL	236	Ethics
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ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement.

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses, COM 231 or COM 240, meet this requirement.

RADIOGRAPHY RELATED REQUIREMENTS (12 credits)*Take the following:*

CIS	101	Introduction to Computer Systems OR
CIS	201	Advanced Computer Technologies
DMS	100	Introduction to Diagnostic Imaging
HOC	130	Introduction to Health Occupations
MOA	120	Medical Terminology

RADIOGRAPHY CORE REQUIREMENTS (52 credits)*Take the following:*

RAD	120	Radiographic Orientation
RAD	121	Radiographic Positioning I
RAD	125	Radiographic Positioning II
RAD	126	Clinical Practicum I
RAD	162	Clinical Practicum II
RAD	211	Clinical Practicum III
RAD	214	Clinical Practicum IV
RAD	219	Clinical Practicum V
RAD	160	Fundamentals of Radiologic Science
RAD	161	Radiographic Exposure
RAD	209	Cross-Sectional Imaging
RAD	212	Special Radiographic Studies
RAD	213	Radiobiology
RAD	218	Radiographic Pathology

Respiratory Care – Associate in Applied Science (RECA.AAS)

Respiratory care is an allied health profession whose practitioners focus on diagnosis and treatment of cardiopulmonary disorders and diseases. A respiratory care practitioner can be instrumental in assisting a physician in the diagnosis, treatment and prevention of a wide spectrum of disorders affecting the heart and lungs, and specializes in the application of scientific knowledge and theory to practical, clinical problems of respiratory care. A respiratory care practitioner is qualified to assume primary clinical responsibility for all respiratory care modalities, including responsibilities involved in supervision of respiratory technician functions.

This is a two-year program leading to an Associate in Applied Science degree. The curriculum consists of integrated didactic and clinical course work in approved clinical education affiliates. The program is designed to prepare the student for employment in the field of respiratory care. Positions are located within hospitals, long-term care facilities and other outpatient settings.

Upon successful completion, students are eligible to write the national Board for Respiratory Care (NBRC) exams. Satisfactory completion of the NBRC board certifying exams allow the respiratory care practitioner to use the initials of RRT, Registered Respiratory Therapist. Admission to the program is not guaranteed: entry into the program is competitive and based on a "points system." The order of acceptance of qualified applicants will be based on points achieved.

Minimum credits	89
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum grade in BIO 132 or BIO 155 or BIO 253 and BIO 254 and MAT 131	3.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (24 credits)**ADO 1: Write clearly, concisely and intelligibly (6 credits)***Take the following:*

ENG	131	Writing Experience I
ENG	132	Writing Experience II

ADO 2: Speak clearly, concisely and intelligibly (3 credits)*Choose one of the following:*

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)*Choose one of the following:*

MAT	131	Intermediate Algebra OR
MAT	141	Pre-Calculus OR
MAT	151	Calculus

ADO 4: Demonstrate scientific reasoning (4-5 credits)*Choose one of the following:*

BIO	132	Human Biology OR
BIO	155	Human Anatomy & Physiology OR
BIO	253	Human Anatomy and Physiology I AND
BIO	254	Human Anatomy and Physiology II

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (4 credits)*Take the following:*

PSY	140	Introduction to Psychology
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ADO 6: Understand aesthetic experience and artistic creativity (3 credits)*Choose one of the following:*

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement.

ADO 8: Make responsible decisions in personal and professional contexts

Program courses, RES 115 or RES 125, meet this requirement.

ADO 9: Working productively with others, recognizing individual contributions to group success

Program courses meet this requirement.

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses, RES 205, RES 225, COM 231 or COM 240, meet this requirement.

RESPIRATORY CARE RELATED REQUIREMENTS

(10 credits)

Take the following:

CEM	131	Fundamentals of Chemistry OR
CEM	137	Chemistry of Life
CIS	101	Introduction to Computer Systems OR
CIS	201	Advanced Information Technologies
MOA	120	Medical Terminology

RESPIRATORY CARE CORE REQUIREMENTS

(55 credits)

Take the following:

RES	100	Respiratory Care Techniques I
RES	104	Cardiopulmonary Assessment I
RES	110	Respiratory Care Techniques II
RES	114	Cardiopulmonary Pathophysiology I
RES	115	Clinical Practice I
RES	120	Respiratory Care Techniques III
RES	124	Respiratory Pharmacology
RES	125	Clinical Practice II
RES	126	Cardiopulmonary Pathophysiology II
RES	203	Diagnostic Theory
RES	205	Clinical Practice III
RES	207	Advanced Cardiopulmonary Anatomy & Physiology
RES	210	Perinatal & Pediatric Respiratory Care
RES	220	Respiratory Seminar
RES	225	Clinical Practice IV

Vascular Sonography – Associate in Applied Science

(VSON.AAS)

A vascular sonographer is a highly skilled allied health professional who performs arterial and venous diagnostic procedures using high frequency sound waves. A vascular sonographer operates a variety of complex diagnostic and monitoring equipment, as well as numerous ancillary devices.

The vascular sonographer performs carotid duplex scanning, lower and upper extremity Doppler examinations, venous duplex scans, abdominal vascular exams, evaluates test results, monitors physiological states of the patient, conducts patient education, and maintains accurate records and protocols during and after procedures. A thorough understanding of hemodynamics and pathophysiology is required.

The vascular sonography program is an online program accredited by the Commission for Accreditation of Allied Health Education Programs (CAAHEP) in the United States. It is a program leading to an Associate in Applied Science degree. The curriculum consists of integrated educational and clinical course work with a minimum of 1,040 supervised clinical hours with an approved clinical education affiliate.

The program is designed to prepare the student for employment in the field of vascular sonography. Vascular positions are located within hospitals, medical clinics, and other diagnostic imaging health institutions. Upon successful completion, students are eligible to apply for certification exams through the American Registry for Diagnostic Medical Sonography and, if successful, use the credentials RVT (Registered Vascular Technologist).

There are special admission requirements to the sonography programs, and it is the student's responsibility to understand the requirements and adhere to them. Entry into a program is competitive and based on a "point system." Point values are based on grades earned in prerequisite coursework and the interview process.

Applications are processed according to the following:

- Applications must be received by the Allied Health Office by May 31.
- DMS Admission Committee conducts consultations.
- Students are notified by mail of application/consultation results.
- Accepted students begin fall semester.

General education prerequisites and related requirement courses must be completed before admission to the program.

Minimum credits	74
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum grade in BIO 132 or BIO 155 or BIO 253/254, HOC 130 and MOA 120	3.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (21 credits)**ADO 1: Write clearly, concisely and intelligibly (3 credits)**

Take one of the following:

ENG	131	Writing Experience I
ENG	132	Writing Experience II

ADO 2: Speak clearly, concisely and intelligibly (3 credits)*Choose one of the following:*

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)*Take the following:*

MAT	131	Intermediate Algebra or higher level
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ADO 4: Demonstrate scientific reasoning (4-8 credits)*Choose one of the following:*

BIO	132	Human Biology OR
BIO	155	Anatomy & Physiology OR
BIO	253	Human Anatomy and Physiology I AND
BIO	254	Human Anatomy and Physiology II

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (4 credits)*Take the following:*

PSY	140	Introduction to Psychology
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ADO 6: Understand aesthetic experience and artistic creativity (3 credits)*Choose one of the following:*

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre

ADO 7: Think critically*Program courses meet this requirement.***ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)***Choose one of the following:*

HPF	160	Wellness
HPF	186	Weight Training and Wellness
HPF	277	Stress Management
HPF	283	Managing Stress and Holistic Health
PHL	236	Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success*Program courses meet this requirement.***ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures***Program courses, HOC 130 or COM 231 or COM 240, meet this requirement.***ALLIED HEALTH PREREQUISITE REQUIREMENTS (15 credits)***Take the following:*

DMS	100	Introduction to Diagnostic Imaging
DMS	104	Introduction to Sonographic Instrumentation
HOC	130	Introduction to Health Occupations
MOA	120	Medical Terminology
PHY	131	Conceptual Physics or Radiologic Physics or equivalent

VASCULAR SONOGRAPHY CORE REQUIREMENTS (36 credits)*Take the following:*

DMS	107	Sonographic Orientation – Vascular
DMS	151	Peripheral Arterial I
DMS	152	Peripheral Arterial II
DMS	155	Peripheral Venous
DMS	161	Vascular Clinical I
DMS	206	Sonographic Instrumentation
DMS	251	Cerebrovascular Imaging
DMS	254	Transcranial Doppler Imaging and Capstone
DMS	265	Vascular Clinical II
DMS	266	Vascular Clinical III

Vascular Sonography – Skill Set, Arterial Imaging

The Vascular Enhancement Skill Set will build upon existing sonography skills and prepare students for employment opportunities. Employment of individuals with an enhanced skill set in lower extremity arterial physiological and duplex imaging is usually through privately run practices (cardiologists) or a hospital imaging department.

Prerequisite requirements: All students must hold sonography credentials (ARDMS and/or CCI) or a graduate of a CAAHEP-accredited program with one year of clinical education in the general and/or cardiac specialty.

Minimum credits	5
Minimum grade in all Core Requirements	3.0
Minimum grade In Related Requirements	4.0
Minimum JC credits	5

VASCULAR SONOGRAPHY ENHANCEMENT CORE REQUIREMENTS (3 credits)*Take the following:*

DMS	151	Peripheral Arterial I
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VASCULAR SONOGRAPHY RELATED REQUIREMENT (2 credits)

Take the following:

DMS 162 Vascular Lab Practice

ADDITIONAL REQUIREMENT

First Aid & Healthcare Provider CPR, Proof of Vaccination(s)

Vascular Sonography – Skill Set, Carotid Duplex

The Vascular Enhancement Skill Set will build upon existing sonography skills and prepare students for employment opportunities. Employment of individuals with an enhanced skill set in carotid duplex imaging is usually through privately run practices (cardiologists) or a hospital imaging department.

Prerequisite requirements: All students must hold sonography credentials (ARDMS and/or CCI) or be a graduate of a CAAHEP-accredited program with one year of clinical education in the general and/or cardiac specialty.

Minimum credits 5
 Minimum grade in all Core Requirements 3.0
 Minimum grade In Related Requirements 4.0
 Minimum JC credits 5

VASCULAR SONOGRAPHY ENHANCEMENT CORE REQUIREMENTS (3 credits)

Take the following:

DMS 251 Cerebrovascular I

VASCULAR SONOGRAPHY RELATED REQUIREMENT (2 credits)

Take the following:

DMS 162 Vascular Lab Practice

ADDITIONAL REQUIREMENT

First Aid & Healthcare Provider CPR, Proof of Vaccination(s)



Vascular Sonography – Skill Set, Venous Duplex

The Vascular Enhancement Skill Set will build upon existing sonography skills and prepare students for employment opportunities. Employment of individuals with a skill set in lower extremity venous duplex-evaluate for obstruction is usually through privately run practices (cardiologists) or a hospital imaging department.

Prerequisite requirements: All students must hold sonography credentials (ARDMS and/or CCI) OR a graduate of a CAAHEP-accredited program with one year of clinical education in the general and/or cardiac specialty.

Minimum credits 5
 Minimum grade in all Core Requirements 3.0
 Minimum grade In Related Requirements 4.0
 Minimum JC credits 5

VASCULAR SONOGRAPHY ENHANCEMENT CORE REQUIREMENTS (3 credits)

Take the following:

DMS 155 Peripheral Venous

VASCULAR SONOGRAPHY RELATED REQUIREMENT (2 credits)

Take the following:

DMS 162 Vascular Lab Practice

ADDITIONAL REQUIREMENT

First Aid & Healthcare Provider CPR, Proof of Vaccination(s)

Transfer Programs

MEDICAL LABORATORY TECHNOLOGY

Medical laboratory technicians search for clues about the presence, extent and causes of disease. They use their knowledge of how diseases affect test results to provide an accurate and complete picture of a patient's condition. MLTs analyze blood and body fluids for a wide variety of chemical changes, using the latest biomedical instruments. They culture and identify bacteria that cause disease and examine blood to detect anemias, leukemias and infections, ensuring that donor blood is safe for transfusion.

Kellogg Community College and JC jointly offer an Associate of Applied Science degree program in medical laboratory technology. This program allows students to take the specified general education courses identified in this agreement at JC and complete their program by taking the occupational specific

courses at Kellogg Community College. These courses may be taken concurrently provided students are formally admitted to the program at Kellogg Community College and all prerequisite course requirements are adhered to. Consult an academic advisor for more information.

The Bachelor of Applied Science in Allied Health option with Siena Heights University offers a unique degree program for JC students with training and/or experience in diagnostic medical sonography, emergency medical services, medical assistant, nursing and related fields. This career-oriented degree for graduates of the JC two-year programs is structured on an inverted major concept. All the courses needed to earn a bachelor's degree are available on JC's main campus through the Siena Heights University degree completion center.

DENTAL HYGIENE

Dental hygienists work under the direction or supervision of a licensed dentist, and must be licensed by the state in which they practice. Clinical responsibilities of the dental hygienist in Michigan includes oral examination; scaling and polishing teeth; exposing, processing, mounting and interpreting x-rays; taking impressions and preparing diagnostic models; and other activities related to the oral health of the patient. JC offers only prerequisite and general education courses that can be transferred to a dental hygiene program. Five colleges/universities offer a dental hygienist program. Some offer an associate degree and others a bachelor's degree. Consult an academic advisor for more information on transfer options available.

MEDICAL SCIENCES (PRE-MEDICINE, PRE-DENTAL, PRE-PHARMACY)

The medical sciences major is designed for pre-professional students who are interested in graduate training in human medicine. Students have a variety of areas of specialization within the field of medicine available to them at the postgraduate level. They may pursue medical, osteopathic or dental school, graduate level pharmacy programs and physicians assistant or pathology assistant programs.

SUGGESTED COURSE SEQUENCE

First Year, Fall Semester

BIO 161 or BIO 162, CEM 141, ENG 131, MAT 141 or MAT 151

First Year, Winter Semester

BIO 232, CEM 142, ENG 132, PSY 140

First Year, Spring Semester

PSY 252, Michigan Transfer Agreement humanities course

Second Year, Fall Semester

CEM 241, PHL 236, PHY 231, Michigan Transfer Agreement social science course

Second Year, Winter Semester

CEM 242, PHY 232, Michigan Transfer Agreement humanities course, program-specific course requirement

PHYSICAL THERAPY

Physical therapists provide clients, infants through elderly adults, with services at the preventive, acute and rehabilitative stages directed toward achieving increased functional independence and decreased functional impairment. Physical therapists interact and practice in collaboration with a variety of health professionals.

SUGGESTED COURSE SEQUENCE

First Year, Fall Semester

BIO 161 or BIO 162, CEM 141, ENG 131, MAT 141

First Year, Winter Semester

CEM 142, ENG 132, PHL 236, PSY 140

Second Year, Fall Semester

BIO 253, MAT 133, PHY 231, Michigan Transfer Agreement humanities course

Second Year, Winter Semester

BIO 254, PHY 232, PSY 252, Michigan Transfer Agreement humanities course

PRE-VETERINARY

Veterinarians play a major role in the health care of pets, livestock, and zoo, sporting, and laboratory animals. Veterinarians also use their skills to protect humans against diseases carried by animals, and conduct clinical research on human and animal health problems.

SUGGESTED COURSE SEQUENCE

First Year, Fall Semester

BIO 161 or BIO 162, CEM 141, ENG 131, MAT 141 or MAT 151

First Year, Winter Semester

BIO 232, CEM 142, ENG 132, Michigan Transfer Agreement social science course

Second Year, Fall Semester

CEM 241, PHY 231, Michigan Transfer Agreement humanities & social science courses

Second Year, Winter Semester

BIO 220, CEM 242, PHY 232, Michigan Transfer Agreement humanities course



Human Services Career Pathway

This career pathway includes careers related to economic, political and social systems including education, government, law and law enforcement, early childhood development and education, civil service, education, leisure and recreation, military, religion, personal services and social services. These may include law and legal studies, law enforcement, public administration and child and family services.

DEGREES/CERTIFICATES

- Corrections
- Law Enforcement

CONCENTRATION

The “concentration” process is a building block approach to completing a trade certificate program. Students can choose to complete the concentration depending upon the level of skill and knowledge desired. Students can apply for a concentration upon completion of the required courses.

TRANSFER PROGRAMS

The first two years of college education usually consist of general education courses, introductory courses in a major and/or program of study, and selected electives. Academic advisors assist in planning transfer programs, and provide transfer guide sheets indicating courses that meet the requirements of various programs of study at four-year colleges. Sample curricula for a few popular transfer programs are included.

- Criminal Justice/Corrections or Law Enforcement to Siena Heights University
- Psychology
- Social Work
- Pre-Law
- Education

Corrections – Associate in Applied Science (*CORR.AAS*)

Corrections officers are charged with safekeeping any person who has been arrested, is awaiting trial or is in a correctional institution. Officers maintain order within the institution, enforce rules and regulations and often supplement counseling that inmates received from mental health professionals. In addition to being prison/jail guards, corrections officers can work in other related positions, such as juvenile facilities.

Minimum credits	61
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (21 credits)

ADO 1: Write clearly, concisely and intelligibly (3 credits)

Take the following:

ENG	131	Writing Experience I
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ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Choose one of the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Take the following:

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (4 credits)

Choose one of the following:

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Human Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy and Physiology I
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them and their implications for the present and future (3 credits)

Take the following:

PLS	141	American National Government
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ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre
THR	145	Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement.

ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)

Choose one of the following:

HPF	160	Wellness
HPF	186	Weight Training and Wellness
HPF	277	Stress Management
HPF	283	Managing Stress and Holistic Health
PHL	236	Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement.

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses, COM 231, COM 240 or CRJ 120, meet this requirement.

CORRECTIONS RELATED REQUIREMENTS (16 credits)

Take the following:

CIS	101	Introduction to Computer Systems OR
CIS	201	Advanced Information Technologies
ENG	232	Technical & Business Writing
PSY	140	Introduction to Psychology
PSY	251	Abnormal Psychology
SOC	231	Principles of Sociology

CORRECTIONS CORE REQUIREMENTS (15 credits)

Take the following:

CRJ	119*	Client Growth & Development
CRJ	120*	Human Relations for Corrections
CRJ	121*	Introduction to Corrections
CRJ	124*	Institution Populations
CRJ	127*	Corrections Law

CORRECTIONS ELECTIVES (9 credits)

Choose nine credits from the following:

CRJ	101	Criminal Law
CRJ	104	Criminal Justice Psychology
CRJ	108	Criminal Justice Fieldwork – Security
CRJ	111	Introduction to Criminal Justice
CRJ	112	Crime & Delinquency
CRJ	117	Criminology
SOC	117	Criminology
CRJ	125	Parole & Probation
CRJ	203	Field Studies

*Recommended for prospective State of Michigan correctional officers. Each corrections course must be completed with a 2.0 to meet the requirement of the Michigan Correctional Officers Training Council "Desired" background for students to be successful in particular courses (this is for courses that do not have specific prerequisites, but desired experience or knowledge) includes a willingness to help others, good interpersonal communication, and critical thinking skills. Students cannot start the program during winter semester and still complete in nine semesters due to prerequisites.

Corrections – Certificate

(*CORR.CERT*)

This certificate program offers an opportunity to begin a study of all of the components of corrections. Students will explore institutions, private security, and the general safe keeping of all individuals detained. It provides a starting point to continue with an associate degree or become employed in many sectors. Employment includes prison guards, jail correction officers, juvenile facility youth specialist (both public and private) and private security.

Minimum credits	35
Minimum cumulative GPA	2.0
Minimum grade in each course	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (20 credits)

Take the following:

COM	231	Communication Fundamentals OR
COM	240	Interpersonal Communication
ENG	131	Writing Experience I
ENG	232	Technical & Business Writing
MA	131	Intermediate Algebra or higher
PLS	141	American National Government
PSY	140	Introduction to Psychology

CORRECTIONS CORE REQUIREMENTS (15 credits)

CRJ	119*	Client Growth & Development
CRJ	120*	Human Relations for Corrections
CRJ	121*	Introduction to Corrections
CRJ	124*	Institution Populations
CRJ	127*	Corrections Law

*Recommended for prospective State of Michigan correctional officers. Each corrections course must be completed with a 2.0 to meet the requirement of the Michigan Correctional Officers Training Council.

Corrections Officer – Skill Set (*CORR.SSET*)

Corrections officers are charged with safekeeping any person who has been arrested, is awaiting trial or is in a correctional institution. Officers maintain order within the institution and enforce rules and regulations. This skill set meets the minimum education requirement to be employed as a corrections officer for the State of Michigan. Other options for employment would include private security, juvenile facilities or corrections officer in a jail setting.

Minimum credits	15
Minimum GPA	2.0
Minimum grade in each course	2.0
Minimum JC credits	15

REQUIRED COURSES (15 credits)

Take the following:

CRJ	119	Client Growth & Development
CRJ	120	Human Relations for Corrections
CRJ	121	Introduction to Corrections
CRJ	124	Institution Populations
CRJ	127	Corrections Law

Students need an ACT of 18 in mathematics, reading and English to be exempt from course placement assessment. Students who complete course placement and who do not receive a minimum of ENG 080 in reading and place into ENG 131 are not eligible to enroll in more than three CRJ courses in one semester.

Corrections Officer Training Program

The Corrections Officer Training Program is an extensive training that includes classroom work, lecture, and hands-on practical activities allowing participants to practice what they have learned. It is focused on integrity, outstanding conduct, superb written and verbal communication skills, professionalism, physical fitness and competency.

The curriculum is mandated by the State of Michigan Department of Corrections Training Council. The courses, programs, and instructors are dedicated to accomplishing the collective goal of transforming a participant into a correctional officer. Each trainee must successfully complete a Correction Officer Training Program prior to becoming a correctional officer. The Certificate received at the end of the program will qualify students for a position as a Corrections Officer.

For more information, visit the web site at www.jccmi.edu/cotp.

Corrections Officer (State Of Michigan)

The information set forth summarizes the requirements of the Michigan Department of Corrections for prospective corrections officers. These requirements, effective October 2000, are for informational purposes only and are subject to change by the Michigan Department of Corrections. Students should contact the Michigan Department of Corrections or the Michigan Department

of Civil Service for information regarding its current requirements for correctional officers 517.334.7569 or 1.888.820.7129.

QUALIFICATIONS FOR CORRECTIONAL OFFICERS

- Minimum requirements: Possession of a high school diploma or GED and a minimum 18 years of age.
- To be eligible for consideration as a corrections officer, certain education and exam requirements must be satisfied.
- Most applicants must pass a written Civil Service Exam and have an educational background that includes at least 15 semester (or 23 term) college credit hours in corrections, criminal justice, psychology, sociology, family relations, guidance and counseling, pastoral counseling, social work or law enforcement. These credits must be earned prior to submitting an application.
- Possession of 30 semester (or 45 term) college credit hours in any academic or degree prerequisite area meets the educational requirements, however passing the Civil Service Exam is also required. These credits must be earned prior to submitting an application.
- Exam will be waived if you have an honorable discharge from active duty or National Guard duty or are currently a member in good standing in the National Guard.
- Any bachelor's degree or two years of satisfactory corrections officer employment at the state or federal prison level fulfills the education requirements and the exam is waived. Before being hired, an applicant must pass a physical fitness test given by the Michigan Department of Corrections which consists of:
 - completing 13 sit-ups in 30 seconds
 - 17 push-ups in 60 seconds, and
 - walking up and down steps, ranging up to 11 3/4 inches, for six minutes.

In addition, an applicant must have acceptable vision, hearing, and general good physical health, and pass a drug screen.

An individual who has been convicted of a felony or domestic violence cannot be hired. Consideration cannot be given to an applicant who is on misdemeanor probation, has outstanding warrants, or has a controlled substance (drug) related conviction in any jurisdiction, including drug-related military discharges. In addition, an applicant who has been convicted of any other misdemeanor shall not be eligible for employment until one year after satisfactory completion of any sentence imposed, including probation.

To apply: applications are available at www.michigan.gov/mdcs. For further information, please call 517.636.0780 or 1.888.820.7129.

Law Enforcement – Associate in Applied Science

(LAEN.AAS)

Careers in law enforcement, including police officers and deputy sheriffs, are ever changing. Police officers help prevent crimes, investigate crimes and control traffic. Detectives and special agents gather facts and evidence for criminal cases. In Michigan, students must complete police academy training to be eligible for employment as a police officer. In many cases, police agencies require a minimum of an associate degree for new employees.

Minimum credits	61
Minimum cumulative GPA	2.0
Minimum grade in all courses	2.0
Minimum JC credits	15

GENERAL EDUCATION REQUIREMENTS (24 credits)

ADO 1: Write clearly, concisely and intelligibly (6 credits)

Take the following:

ENG	131	Writing Experience I
ENG	132	Writing Experience II

ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Choose one of the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

ADO 3: Demonstrate computational skills and mathematical reasoning (4 credits)

Take the following:

MAT	131	Intermediate Algebra or higher
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ADO 4: Demonstrate scientific reasoning (4-5 credits)

Choose one of the following:

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	155	Human Anatomy & Physiology
BIO	158	Environmental Science
BIO	161	General Biology I
BIO	162	General Biology II
BIO	220	Microbiology
BIO	253	Human Anatomy and Physiology I
CEM	131	Fundamentals of Chemistry
CEM	141	General Chemistry
GEL	109	Earth Science
GEL	160	Introduction to Geology
NSC	131	Contemporary Science
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them and their implications for the present and future. (3 credits)

Take the following:

PLS 141 American National Government

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART 111 Art History: Prehistoric to 1400
 ART 112 Art History: Renaissance to Present
 ENG 210 Introduction to Film
 ENG 246 Short Story & Novel
 ENG 247 Poetry & Drama
 ENG 252 Shakespeare
 ENG 255 American Literature – 19th Century
 ENG 256 American Literature – 20th Century
 HUM 131 Cultural Connections
 MUS 131 Understanding Music
 THR 116 Introduction to Theatre
 THR 145 Fundamentals of Acting

ADO 7: Think critically

Program courses meet this requirement.

ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)

Choose one of the following:

HPF 160 Wellness
 HPF 186 Weight Training and Wellness
 HPF 277 Stress Management
 HPF 283 Managing Stress & Holistic Health
 PHL 236 Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement.

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses, COM 231 or COM 240, meet this requirement.

LAW ENFORCEMENT RELATED REQUIREMENTS (16 credits)

Take the following:

CIS 101 Introduction to Computer Systems **OR**
 CIS 201 Advanced Information Technologies
 ENG 232 Technical & Business Writing
 PSY 140 Introduction to Psychology
 PSY 251 Abnormal Psychology
 SOC 231 Principles of Sociology

LAW ENFORCEMENT CORE REQUIREMENTS (12 credits)

Take the following:

CRJ 101 Criminal Law
 CRJ 111 Introduction to Criminal Justice
 CRJ 114 Police Administration & Operations
 CRJ 117 Criminology **OR**
 SOC 117 Criminology

LAW ENFORCEMENT ELECTIVES (9 credits)

Choose 9 credits from the following:

CRJ 102 Criminal Investigation
 CRJ 104 Criminal Justice Psychology
 CRJ 108 Criminal Justice Fieldwork – Security
 CRJ 112 Crime & Delinquency
 CRJ 113 Introduction to Criminalistics
 CRJ 116 Fire Investigation I
 CRJ 121 Introduction to Corrections
 CRJ 203 Field Studies

**Law Enforcement–
Certificate (LAEN.CERT)**

A certificate in law enforcement offers individuals an opportunity to pursue initial study in their areas of interest. Credits earned may be applied toward an associate degree.

Minimum credits 35
 Minimum cumulative GPA 2.0
 Minimum grade in all courses 2.0
 Minimum JC credits 15

GENERAL EDUCATION REQUIREMENTS (17 credits)

Take the following:

ENG 131 Writing Experience I
 ENG 232 Technical & Business Writing
 MAT 131 Intermediate Algebra or higher
 PLS 141 American National Government
 PSY 140 Introduction to Psychology

LAW ENFORCEMENT CORE REQUIREMENTS (18 credits)

Take the following:

CRJ 101 Criminal Law
 CRJ 102 Criminal Investigation
 CRJ 111 Introduction to Criminal Justice
 CRJ 112 Crime & Delinquency
 CRJ 114 Police Administration & Operations
 CRJ 117 Criminology **OR**
 SOC 117 Criminology

Transfer Programs

CRIMINAL JUSTICE/CORRECTIONS OR LAW ENFORCEMENT

Students may choose to begin their coursework at JC and then transfer to earn a bachelor's degree in criminal justice. These students may manage prison systems, serve in law enforcement departments at the state and federal level or become parole and probation officers.

SUGGESTED COURSE SEQUENCE

First Year, Fall Semester

BIO 161 or BIO 162, CRJ 111, ENG 131, MAT 131 or MAT 141*

First Year, Winter Semester

CEM 131, CRJ 112, ENG 132, PSY 140

Second Year, Fall Semester

CRJ 101 or CRJ 114, MAT 133**, PSY 251, PLS 141, PHL 231

Second Year, Winter Semester

CRJ 117 or SOC 117, SOC 235, Michigan Transfer Agreement humanities courses

**Check mathematics requirements of transfer institution.*

MSU transfer students register for PSY 144

CRIMINAL JUSTICE – BACHELOR'S DEGREE OPTION WITH SIENA HEIGHTS UNIVERSITY

Students can work with staff from JC and Siena Heights University to earn a Bachelor of Arts degree in criminal justice. Tailored to build on the JC associate degrees in law enforcement or corrections, students can transfer up to 90 credits from JC and complete at least 30 hours credit from Siena with a minimum of 18 hours of criminal justice classes. All the courses for the bachelor's degree in criminal justice are available at the JC main campus through the Siena Heights University degree completion center.

CRIMINAL JUSTICE – BACHELOR'S DEGREE OPTION WITH FERRIS STATE UNIVERSITY

Students can work with staff from JC and Ferris State University to earn a Bachelor of Science degree in criminal justice/law enforcement. Students may complete their associate degree in law enforcement from Jackson College, then continue their third year with several Ferris State courses taught on the JC Campus. The final year would be a transfer to Ferris State in Big Rapids to complete their bachelor's degree which includes a police academy program. Students would graduate with a Bachelor of Science Degree and a MCOLES certification. (Michigan Commission on Law Enforcement Standards) The MCOLES certification qualifies the student to work as a law enforcement officer in the State of Michigan.

PSYCHOLOGY

Psychology covers a broad range of topics. Psychologists specialize in such areas as clinical psychology, counseling psychology, developmental psychology, physiological psychology, neuropsychology, educational psychology, experimental psychology, cognitive psychology, social psychology and cross-cultural psychology. Specialization begins after transferring and continues through graduate work. The first two years of coursework are similar regardless of the specialization.

SUGGESTED COURSE SEQUENCE

First Year, Fall Semester

BIO 161 or 162, ENG 131, MAT 141, PSY 140

First Year, Winter Semester

CEM 131, ENG 132, PSY 144, PSY 152, SOC 231

First Year, Spring Semester

COM 231, HIS 232

Second Year, Fall Semester

CIS 101, PLS 141, PSY 252, SOC 235, Michigan Transfer Agreement humanities course

Second Year, Winter Semester

ANT 131, ECN 231, PSY 251, PHL 231, PSY elective

SOCIAL WORK

Students planning a career in social work will learn to identify problems affecting individuals and their environment, become more aware and sensitive to issues of race, ethnicity, religion and gender and use their knowledge, skills and values to enhance the quality and delivery of services in the community. To prepare to become a social worker students obtain either a bachelor's or master's degree. Students need to investigate the programs at their intended transfer institution to be sure they offer the desired program. All social work programs are competitive.

SUGGESTED COURSE SEQUENCE

First Year, Fall Semester

CIS 101, ENG 131, MAT 131 or MAT 141*, NSC 131

First Year, Winter Semester

BIO 161 or 162, ENG 132, MAT 133, PSY 140

First Year, Spring Semester

HIS 232, SOC 231

Second Year, Fall Semester

ECN 231, HUM 131, PLS 141, PSY 251, SOC 235

Second Year, Winter Semester

COM 231, PHL 231, PSY elective, SOC elective

**Check mathematics requirements at transfer institution.*

PRE-LAW

Pre-law is a major often selected by students interested in pursuing careers in government or law. For many students, a bachelor's degree in political science is the first step toward their ultimate goal of an advanced degree in programs such as public administration, law or urban planning, to name a few.

SUGGESTED COURSE SEQUENCE FOR PRE-LAW

First Year, Fall Semester

ENG 131, HIS 231, MAT 141, PLS 141, Michigan Transfer Agreement science course

First Year, Winter Semester

ENG 132, MAT 133, PHL 231, Michigan Transfer Agreement science course

Second Year, Fall Semester

COM 231, ECN 231, HIS 232, PSY 140, elective

Second Year, Winter Semester

ECN 232, PHL 232, SOC 231, electives

EARLY CHILDHOOD AND TEACHER EDUCATION

The field of education changes rapidly and aspiring teachers must be motivated and dedicated to academic excellence and willing to face the challenges presented in the real world of students, teachers, classrooms and schools in our 21st century. Students pursuing either an elementary, special education or secondary teaching certificate need to major and/or minor in subject disciplines they plan to teach. All students pursuing teacher certification should plan to take the Michigan Test for Teacher Certification: Basic Skills (reading, writing and mathematics) during the second semester of their freshman year or after completion of 15-30 freshman college credit hours. All colleges require successful completion of this test before acceptance into their departments of education. For information on test dates, registration and cost, contact the Student Center, the teacher education academic advisor, the education coordinator, or the JC Teacher Education website at: www.jccmi.edu/academics/teachereducation.

Each four-year institution has additional requirements for admission into their college/school of education. Students must investigate specific requirements in the teacher education program offered by their intended transfer institution, including information pertaining to certification major and minor areas. Each four-year institution offers teacher certification in particular subject areas. Early in the second semester of the freshman year, students should contact their intended transfer institution for up-to-date transfer information.

Students must first be admitted to the four-year institution and then follow the specific institution's procedure for admittance into that institution's college/school of education. Acceptance into a four-year college is not an automatic acceptance into their college/school of education. To become a state certified teacher in Michigan, a student must earn a bachelor's degree in education and pass the Michigan Basic Skills Test as well as the content test in their major and minor(s).

EARLY CHILDHOOD AND ELEMENTARY EDUCATION

The curriculum for students planning to become early childhood or elementary teachers varies considerably depending on teaching major and/or minors chosen and intended transfer institutions. Please see an advisor for additional information for the full-time early childhood and elementary education student program at JC. Additional math and science requirements are part of the updated elementary certification.

SECONDARY EDUCATION AND SPECIAL EDUCATION

Students planning to become a secondary education teacher or a special education teacher must follow the recommended course of study provided by the transfer institution. Consult the transfer institution of choice for requirements as early as possible for course selection recommendations.

JC TEACHER EDUCATION FEATURES

JC's program for education majors benefits the student by:

- A specially designed booklet for Early Childhood and Teacher Education advising available from the teacher education advisor or the program coordinator.
- Partnerships with and transfer facilitation to four-year institutions.
- Focusing on education issues and perspectives through:
- EDU focused general education curriculum courses (ex. Chemistry 131 – special section with education focus).
- Student forums and events where subject matter relative to education and the teaching profession is presented, discussed and clarified.
- Newsletters and web site information www.jccmi.edu/academics/teachereducation/.
- The ability to earn an associate degree while preparing to transfer to a four-year institution.

JC recommends by the end of the freshman year each student:

- Investigate and decide a major/minor subject to teach.
- Investigate and decide on a transfer four-year institution.
- Complete application for the Michigan Test for Teacher Certification (MTTC-Basic Skills).
- Contact desired transfer institution for information regarding accepted courses or follow that institution's transfer guidelines.

ADDITIONAL TEACHER EDUCATION COURSES INCLUDE:

ART	131	Art Education
ENG	254	Children's Literature
MAT	210	Foundations in Math I
MAT	211	Foundations in Math II
MUS	133	Music Education

**Several EDU focus courses are available each semester. Check the teacher education web site at www.jccmi.edu/programs/teachereducation/. See respective areas for course descriptions. Always check your transfer institution for transferability.*



Agriscience and Natural Resources Career Pathway

Careers in this pathway are related to agriculture, the environment and natural resources. These include agricultural sciences, earth sciences, environmental sciences, fisheries, forestry, horticulture and wildlife.

Transfer Programs

The first two years of college education usually consists of general education courses, introductory courses in a major and/or program of study, and selected electives. Academic advisors assist in planning a student's transfer program. They can also provide transfer guide sheets indicating courses that meet the requirements of various programs of study at four-year colleges. Sample curricula for a few popular transfer programs are included. Please meet with an advisor at Jackson College for assistance in selecting courses that will transfer to your intended transfer institution; some requirements will vary.

- Biology
- Mathematics

BIOLOGY

Biology, the study of living organisms, is an exciting, dynamic field that offers the opportunity to study and explore animals, plants and bacteria under a wide range of conditions in the laboratory and outdoors. Biologists work in such widely varying areas as medicine, crop improvement, wildlife management, forensics, toxic waste management, environmental preservation and education.

SUGGESTED COURSE SEQUENCE FOR BIOLOGY MAJORS

First Year, Fall Semester

BIO 161, CEM 141, ENG 131, MAT 141

First Year, Winter Semester

BIO 232, CEM 142, ENG 132, MAT 151*

First Year, Spring Semester

Michigan Transfer Agreement social science and humanities courses

Second Year, Fall Semester

BIO 231, CEM 241, PHY 231

Second Year, Winter Semester

CEM 242, PHY 232, Michigan Transfer Agreement social science and humanities courses

**Not required by all transfer institutions.*

MATHEMATICS

Students interested in the field of mathematics may major in mathematics or statistics. Mathematics majors find careers in applied mathematics and education. Statistics majors work in such areas as computer science, management and accounting.

SUGGESTED COURSE SEQUENCE FOR MATHEMATICS

First Year, Fall Semester

ENG 131, MAT 151, PSY 140, ECN 231

First Year, Winter Semester

CPS 177, ENG 132, MAT 154, MAT 133**

Second Year, Fall Semester

MAT 251, PHY 251, PHL 231, Michigan Transfer Agreement social science course

Second Year, Winter Semester

MAT 254, PHY 252, Michigan Transfer Agreement humanities courses

MSU students should register for PSY 144

MILITARY SCIENCE (ROTC)

Jackson College (JC) students may participate in Reserve Officer Training Corps (ROTC) during their tenure at JC. Students may complete their first two years of the four-year program while students at JC. Students transferring to a four-year institution and completing the ROTC program requirements will receive an officer commission upon graduation.

Students must take all of the following courses unless granted advanced placement while at JC:

MSL	101	Foundations of Officership (2 credits)
MSL	102	Basic Leadership (2 credits)
MSL	201	Individual Leadership Studies (2 credits)
MSL	202	Leadership and Teamwork (2 credits)

Students wishing further information about the ROTC programs should contact: Department of Military Science, Eastern Michigan University, 18 Roosevelt Hall, Ypsilanti, MI 48197. 734.487.1020.



Course Descriptions

Internships, independent study, special topics and work experience are special options offered in each discipline. See their activity descriptions. Students seeking any of these options should meet and discuss the choice with the respective faculty.

*You may meet this prerequisite based on your course placement, ACT score or successful college coursework. Visit our web site for current assessment options and requirements.

Accounting (ACC)

ACC 115 PAYROLL ACCOUNTING (2 CR)

Accurate payroll records and timely payroll tax reporting are critical elements for all successful businesses. Learn to apply payroll accounting rules and procedures to support business operations. Learn employment and tax laws that affect payroll preparation. Learn the skills, procedures, and concepts necessary to compute a company's payroll. Topics include hiring, gross pay, FICA taxes, income taxes, employee deductions and benefits, payroll accounting, earnings records, tax deposits, unemployment taxes, recording payroll transactions, Form 940EZ, Form 941, reporting employee earnings and special situations.

Prerequisites: CIS 095*, ENG 085* and ENG 090*

ACC 122 VOLUNTEER INCOME TAX PROJECT (3 CR)

Students will provide free tax service to low to mid income, elderly and disabled tax clients. Working with both the Community Action Agency and the Internal Revenue Service, students will train and test to become VITA (Volunteer Income Tax Assistor) tax preparers. Training will begin during January, field work will take place through April 15 and coursework will wrap up during the remainder of April. Previous computer experience is strongly recommended.

Prerequisites: ENG 085*, CIS 095*, and MAT 020* or higher

ACC 130 QUICKBOOKS PRO (2 CR)

Today nearly all businesses rely on computer software to facilitate the accounting process. Learn to use the many features of this popular and sophisticated small business computerized accounting system. Topics include customizing the system to your business, invoicing, statements, collections, bill paying, general ledger, budgeting and tax reports.

Prerequisites: ACC 216 or higher and CIS 095*

ACC 214 INCOME TAX ACCOUNTING (3 CR)

Federal income tax for personal and business use is explored. Concepts covered include taxable income, deductions, exclusions, exemptions and credits against the tax. Proprietorship tax returns including account and depreciation methods, self-employment taxes, self-employed retirement plans, capital gains and losses, disposition of property (both personal and business) and estimated tax declaration.

Prerequisites: CIS 095* and MAT 020* or higher

ACC 216 FINANCIAL ACCOUNTING CONCEPTS (4CR)

This course is designed for the non-accounting supervisor/manager who must have an understanding of financial and managerial accounting as it is used in decision making. Learn about annual reports, financial statements, balance sheet accounts and accounting transactions. Focus on how accounting information is used in decision making and not on the mechanics behind that accounting information. This is an introductory accounting course required for some BUA, CIS and HOC programs. Students should consider their academic program and select either ACC 216 or ACC 231 for their introductory accounting course.

Prerequisites: CIS 095*, ENG 085*, ENG 090* and MAT 020* or higher

* You may meet this prerequisite based on your course placement, ACT score or successful college coursework. Visit www.jccmi.edu for current assessment options and requirements.

ACC 231 PRINCIPLES OF ACCOUNTING I (4 CR)

Learn the theory and practice of recording financial accounting data and preparation of financial statements in accordance with Generally Accepted Accounting Principles (GAAP) with an emphasis on corporations. Topics include account analysis, month end accounting, and financial statement preparation through the statement of cash flows, current software and online applications will be utilized.

Prerequisites: ENG 085, ENG 090*, MAT 033* or higher and CIS 101 or CIS 121*

ACC 232 PRINCIPLES OF ACCOUNTING II (4 CR)

Use analytical accounting tools, calculations and schedules to support and impact the managerial decision making process. Topics include cost accounting, break-even analysis, differential analysis, financial statement analysis, budgeting and other managerial accounting tools. Current software and online applications will be utilized.

Prerequisite: ACC 231

ACC 234 MANAGERIAL ACCOUNTING (4 CR)

Management level professionals from all disciplines will be faced with complex situations and decisions. Appropriate managerial accounting reports and critical thinking skills are crucial to a proactive management process. Learn about financial statement analysis, cash flow forecasting, job order costing in manufacturing, process costing in manufacturing, activity based costing in manufacturing, cost-volume analysis, cost behavior analysis, budgeting, responsibility accounting, case study analysis, critical thinking and decision-making skills.

Prerequisite: ACC 232

ACC 240 INTERMEDIATE ACCOUNTING (4 CR)

Professional accountants must have a solid background in Generally Accepted Accounting Principles (GAAP) financial accounting concepts. Review and expand your knowledge of accounting theory and processes, nature and content of the balance sheet and income statement, present value tables and their application, currently applicable General Accepted Accounting Principles (GAAP) and recent Financial Accounting Standards Board (FASB) pronouncements.

Prerequisite: ACC 232

ACC 245 INTERNSHIP/EXTERNSHIP (3 CR)

Gain valuable work experience in an accounting position. The position must be obtained by the student in coordination with a faculty member and approved by the department before the semester begins.

Aviation Flight Technology (AFT)

AFT 110 PRIMARY GROUND SCHOOL (3 CR)

Preparation for the FAA Private Pilot written examination by classroom work on federal aviation regulations, air space, meteorology, navigation, communication and aerodynamics.

AFT 112 PRIMARY FLIGHT I (3 CR)

Course includes 20/25 hours of flight. This course prepares the student for solo flight with 15/20 hours of dual instruction and five hours of solo flight. Includes preflight, start-up, radio communication, taxiing, basic flight maneuvers, takeoffs, landings, etc. Must be able to obtain a Third Class Medical Certificate.

AFT 114 PRIMARY FLIGHT II (3 CR)

Course includes 15/20 hours of flight. This course prepares the student for solo navigation and solo cross-country flight to meet the requirements for the Private Pilot Practical test. Includes basic instrument training.

Prerequisite: AFT 112

AFT 116 PRIMARY FLIGHT III (3 CR)

Course includes 20/25 hours of flight and prepares the student for Private Pilot Certification including night flight and proficiency in the required FAA maneuvers.

Prerequisite: AFT 114

AFT 125 COMMERCIAL GROUND SCHOOL (3 CR)

Prepares the student for the FAA Commercial Pilot written examination. In-depth study of meteorology, federal aviation regulations, aircraft systems, airspace, aerodynamics, etc.

AFT 130 COMMERCIAL FLIGHT I (4 CR)

Initial flight training leading to the Commercial Pilot Certificate with instrument rating. Advanced flight training includes chandelles, lazy 8s, pylons 8s, along with basic instrument techniques.

Prerequisite: AFT 114

AFT 135 INSTRUMENT GROUND SCHOOL (3 CR)

Prepares the student for the FAA Instrument Pilot written examination through study of federal aviation regulations, A/C systems, meteorology, IFR departure, en route and arrival procedures.

Prerequisite: AFT 114

AFT 140 COMMERCIAL FLIGHT II (4 CR)

Continuation of advanced and instrument flight training including night, basic instrument procedures, navigation, and cross-country flight. Also includes introduction to complex aircraft.

Prerequisite: AFT 130

AFT 200 COMMERCIAL FLIGHT III (4 CR)

Continuation of advanced and instrument flight procedures with emphasis on high-performance maneuvers, solo cross-country and dual instrument en route and approach procedures.

Prerequisite: AFT 140

AFT 205 COMMERCIAL FLIGHT IV (4 CR)

Culmination of the commercial/instrument curriculum with requirements completed for Commercial Pilot Certificate with Instrument rating in the complex aircraft.

Prerequisite: AFT 200

AFT 210 INSTRUMENT FLIGHT (4 CR)

Designed for the non-commercial pilot, includes all phases of instrument flight including basic instrument, departure, en route and arrival procedures.

Prerequisite: AFT 135

AFT 215 FLIGHT INSTRUCTOR THEORY (3 CR)

Preparation for completion of the two FAA written examinations for Flight Instructor-Airplane. Covers theory of instruction and analysis of flight maneuvers from the perspective of the instructor.

Prerequisite: AFT 205

AFT 220 FLIGHT INSTRUCTOR FLIGHT (3 CR)

Preparation for the Flight Instructor-Airplane Certificate through effective techniques of lesson planning, teaching methods, and analysis of maneuvers.

Prerequisite: AFT 205

AFT 230 INSTRUMENT FLIGHT INSTRUCTOR FLIGHT (3 CR)

Preparation of materials and teaching methods, analysis of maneuvers and instruction in flight instructor responsibilities.

Prerequisite: AFT 215

AFT 235 FLIGHT TRANSITION (2 CR)

Provides the licensed pilot with the opportunity to develop the knowledge, experience, and flight skills needed for transition to the next level of aircraft (e.g. helicopter, multiengine, or other complex aircraft).

AFT 240 BIENNIAL FLIGHT REVIEW CLINIC (1 CR)

Provides the flight review necessary for FAA biennial requirements. Includes ground and flight review appropriate to the certificate or rating held by the student.

AFT 250 IFR RECURRENCE (1 CR)

Designed for the instrument pilot in need of recurrent training. Satisfies FAR Part 61 requirement for recent IFR experience. Student may utilize simulator, aircraft or both.

AFT 275 MAINTENANCE FOR PILOTS (2 CR)

Pilot-owner oriented procedures for legal self maintenance of aircraft. Considerable hands-on experience detailing preventative maintenance, inspection and repair of aircraft. Contains a review of federal aviation regulations, documents and standard practices pertaining to pilot-owner maintenance.

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Alternative Energy (ALT)

ALT 200 PRINCIPLES OF ALTERNATIVE ENERGY (3 CR)

(Same as ELT 160)

This course will introduce students to alternative energy systems and their design and applications. The course will focus primarily on wind turbines, solar systems, and hydrogen fuel cells. A basic understanding of electricity is highly recommended.

Prerequisites: ENG 085 and MAT 020* or higher*

ALT 210 FUNDAMENTALS OF ENERGY EFFICIENCY (2 CR)

(Same as CCT 160)

This course will explore the fundamentals of designing and maintaining an energy efficient building to reduce a homeowner or business's cost of utilities. Students will learn techniques to identify wasted energy and the methods needed to modernize an energy inefficient home.

Prerequisites: ENG 085 and MAT 020* or higher*

ALT 215 ENERGY AUDIT TECHNIQUES (3 CR)

(Same as CCT 162)

This course will explore the necessary knowledge and skills to conduct a building energy audit. The class will learn how to operate the latest building science technology and equipment to identify heating, cooling, base load, and air leakage problems in a building.

Prerequisites: CCT 160 and MAT 033 or higher*

ALT 250 WIND ENERGY (3 CR) (Same as ELT 163)

In this course students are exposed to many of the skills necessary to install a residential wind turbine system. Topics include siting wind turbines, turbine components, estimating turbine electricity output, loading, battery, inverters and off-grid/grid-connected systems. Labs include hands-on activities with turbines and electrical equipment. Prior electrical skills and knowledge are required to be successful in this course.

Prerequisites: ELT 126 and ELT 151

ALT 255 SOLAR ENERGY (3 CR) (Same as ELT 166)

This course explores the design, installation and maintenance of photovoltaic (PV) systems. Topics include site survey and assessment, estimating solar array electricity output, inverters, battery systems and off-grid/grid-connected systems. Labs include hands-on activities with solar panels and electrical equipment. Prior electrical skills and knowledge are required to be successful in this course.

Prerequisites: ELT 120 and ELT 151

**ALT 260 GEOTHERMAL ENERGY & SYSTEMS (2 CR)
(Same as CCT 165)**

This course will explore the basics of geothermal energy production, theory and technology. Residential system installation, maintenance, and problem diagnosis will also be covered.

Prerequisites: CCT 121 and CCT 131 or ELT 120

**ALT 265 SOLAR THERMAL ENERGY & SYSTEMS (2 CR)
(Same as CCT 167)**

This course will explore the basics of solar thermal energy technology and application. The class will also cover system installation, maintenance and problem diagnosis.

Prerequisites: CCT 121 and CCT 131 or ELT 120

**ALT 270 ALTERNATIVE FUELS (3 CR)
(Same as AUT 160)**

This course is an overview of alternative fuels used in automobiles and light trucks. Students learn about various alternate fuels, their effect on exhaust emissions, their effect on the environment, the economic impact of alternate fuels and how they contribute to the reduction of importing foreign oil. Topics include hydrogen, fuel cells, natural gas (CNG & LNG), propane (LP gas), ethanol, methanol and biodiesel.

Prerequisite: ALT 200 or ELT 160

** You may meet this prerequisite based on your course placement, ACT score or successful college coursework. Visit www.jccmi.edu for current assessment options and requirements.*

Anthropology (ANT)

ANT 131 CULTURAL ANTHROPOLOGY (3 CR)

Cultural anthropology is a one semester introductory course. The course focuses on the thesis that every society is based on an integrated culture, which satisfies human needs and facilitates survival. The course also explores the ways in which our own culture fits into the broad range of human possibilities.

*Prerequisite: ENG 085**

Art

ART 101 TWO-DIMENSIONAL DESIGN (3 CR)

Students will learn the principles and elements of 2-D design and practice their application in a variety of hands-on studio projects. Critical thinking skills such as problem solving, understanding the creative process (from idea to finished product), and addressing visual and conceptual themes are essential parts of the course. These skills are reflected in studio projects.

ART 103 DRAWING I: FOUNDATIONS (3 CR)

This course introduces basic drawing principles and techniques in a studio setting. Students explore contour and tonal drawing using various subjects and media in both observational and conceptual drawings. Projects will incorporate a variety of ability levels, as well as traditional and non-traditional media (including digital images). Students will draw from a nude model. Critical thinking skills such as problem solving, understanding the creative process (from idea to finished product), and addressing visual and conceptual themes are essential parts of the course, reflected in the studio projects. An end of semester portfolio represents students' growth and artistic development.

ART 111 ART HISTORY: PREHISTORIC TO 1400 (3 CR)

This course is a survey of art history and aesthetics covering art and architecture from prehistoric times to 1400.

*Prerequisite: ENG 085**

ART 112 ART HISTORY: RENAISSANCE TO PRESENT (3 CR)

This course is a survey of art history and aesthetics covering art from the Renaissance through the 20th century.

*Prerequisite: ENG 085**

ART 121 CERAMICS I: FOUNDATIONS (3 CR)

A general overview of ceramics that focuses on a variety of hand building techniques as well as wheelwork and finishes.

ART 122 CERAMICS II: WHEEL & CERAMIC SCULPTURE (3 CR)

This course allows the advanced students an opportunity for further work on wheel-produced production pieces, as well as exploring the possibilities of sculpture created with ceramic materials. Advanced finishing and firing techniques will also be considered.

Prerequisite: ART 121

ART 131 VISUAL ARTS EDUCATION (3 CR)

Students explore theories and philosophies of art education with an emphasis on elementary school children's artistic development and hands-on studio art projects. Students study the history of art, aesthetics and art production with a focus on student diversity and multicultural connections and its incorporation in the classroom. Service learning and other fieldwork opportunities are key parts of the course. No prior art experience necessary.

ART 137 DIGITAL PHOTOGRAPHY I (3 CR)

(SAME AS CIS 137)

This course provides the necessary information and assistance in using a digital camera to capture, edit and manipulate top quality images for both the Internet and printing. Includes techniques on layout, composition, message and color. Students supply their own camera.

ART 152 PAINTING I: DESIGN & COLOR (3 CR)

The elements and principles of design and color are introduced to create basic painting composition in a studio setting. Emphasis is given to techniques using acrylics and/or watercolor media. Critical thinking skills such as problem solving, understanding the creative process (from idea to finished product), and addressing visual and conceptual themes are essential parts of the course, reflected in the studio projects. Students will paint from a nude model. Gallery trips, as well as other field experiences, are key aspects of this course. Students work with the instructor to mount an end of semester exhibition, showcasing their artistic growth and development.

Prerequisite: ART 103

ART 201 THREE-DIMENSIONAL DESIGN: SHAPES & SPACE (3 CR)

Students learn the principles and elements of three-dimensional design and study how to apply them in a variety of studio projects. Students understand and demonstrate the different construction methods needed to create sculpture with a diverse array of media. Critical thinking skills such as problem solving, understanding the creative process (from idea to finished product), and addressing visual and conceptual themes are essential parts of the course. These skills are reflected in studio projects.

ART 205 DRAWING II: FIGURE & COMPOSITION (3 CR)

Students learn the elements and principles of drawing from life, with the emphasis on basic anatomy and advanced compositional elements. Projects incorporate advanced techniques and nontraditional media in a studio setting. Students will draw from a nude model. Critical thinking skills such as problem solving, understanding the creative process (from idea to finished product), and addressing visual and conceptual themes are essential parts of the course. These skills are reflected in studio projects.

Prerequisite: ART 103

ART 237 DIGITAL PHOTOGRAPHY II (3 CR)

(SAME AS CIS 237)

This course provides the opportunity to refine and extend the skills of photographic seeing. Personal skills in digital photography will be used to explore a complete body of work. Students will be using Photoshop® CS5 to edit and explore their creative outlets further. Students' individual, personal goals will be set and executed during the semester.

Prerequisite: ART 137 or CIS 137

ART 240 PRINTMAKING (3 CR)

The elements and principles of design and color are introduced to create prints in a studio setting. Emphasis is given to techniques using a variety of media and technologies. Critical thinking skills such as problem solving, understanding the creative process (from idea to finished product), and addressing visual and conceptual themes are essential parts of the course, reflected in the studio projects. Gallery trips, as well as other field experiences are key aspects of this course. Students work with the instructor to mount an end of semester exhibition, showcasing their artistic growth and development.

Prerequisite: ART 101 or ART 103

ART 252 PAINTING II: THE FIGURE (3 CR)

Student work will primarily involve paintings from a nude model in a studio setting. Students extend previous learning by solving problems dealing with complex compositional and color painting in a variety of situations. The development of a personal style and a culminating portfolio of work are emphasized.

Prerequisite: ART 152

** You may meet this prerequisite based on your course placement, ACT score or successful college coursework. Visit www.jccmi.edu for current assessment options and requirements.*

Automotive Service Technology (AUT)

AUT 101 GENERAL SERVICE (2 CR)

This course is designed for those who wish to explore the automotive service technician occupation. Introductory exposure to the various service areas is provided, along with student participation of various service tasks.

AUT 102 ENGINE PERFORMANCE I (4 CR)

A comprehensive study including hands-on repair of the automobile's ignition and emission systems. Service procedures include scope analysis, compression testing, cylinder leak-down testing, component testing with digital multimeters and lab scopes, tune-up, and troubleshooting of the various systems. The combination of AUT 102 and 103 prepares the student with job skills for entry into the workforce and the knowledge for successfully completing the Michigan or ASE certification examinations required for mechanic licensing.

Prerequisites: ENG 085 and MAT 020* or higher*

AUT 103 ENGINE PERFORMANCE II (4 CR)

A comprehensive study including hands-on repair of the automobile's fuel and computerized engine control systems. Service procedures include fuel pressure testing, fuel injector testing, exhaust gas analysis, scan tool usage, component testing with digital multimeters and lab scopes, and troubleshooting of the various systems. The combination of AUT 102 and 103 prepares the student with job skills for entry into the workforce and the knowledge for successfully completing the Michigan or ASE certification examinations required for mechanic licensing. Students are required to take the Michigan certification test as an integral part of the course.

Prerequisite: AUT 102

AUT 105 AUTOMOTIVE BRAKES (3 CR)

A comprehensive study including hands-on repair of the automobile's braking systems. Service procedures include drum brake service, disc brake service, machining drums and rotors, parking brake service, hydraulic system repair, anti-lock brake system service, and troubleshooting the various systems. This course prepares the student with job skills for entry into the workforce and the knowledge for successfully completing the Michigan or ASE certification examinations required for mechanic licensing. Students are required to take the Michigan certification test as an integral part of the course.

Prerequisites: AUT 101, AUT 234, ENG 085 and MAT 020**

AUT 106 SUSPENSION & STEERING (3 CR)

A comprehensive study including hands-on repair of the automobile's steering and suspension systems. Service procedures include pre-alignment inspections, four-wheel alignment, conventional suspension and steering systems, McPherson strut service, rack & pinion steering service, component replacement, and troubleshooting the various systems. This course prepares the student with job skills for entry into the workforce and the knowledge for successfully completing the Michigan or ASE certification examination required for mechanic licensing. Students are required to take the Michigan certification examination as an integral part of the course.

Prerequisites: AUT 101, AUT 234, ENG 085 and MAT 020**

AUT 108 AUTOMOTIVE AIR CONDITIONING & HEATING (3 CR)

A comprehensive study including hands-on repair of the automobile's air conditioning and heating systems. Service procedures include cooling system service, refrigeration system service, control system repair, heater service, component testing, environmental issues (the ASE Refrigerant and Recovery Certification test is included and required), and troubleshooting the various systems. This course prepares the student with job skills for entry into the workforce and the knowledge for successfully completing the Michigan or ASE certification examination required for mechanic licensing. Students are required to take the Michigan certification test as an integral part of the course.

Prerequisites: ENG 085 and MAT 020**

AUT 112 ELECTRICAL SYSTEMS I (3 CR)

A comprehensive study including hands-on repair of the automobile's electrical system. Service procedures include basic electrical testing using test lights and multimeters, reading basic electrical schematics, battery service, starter service, alternator service, and troubleshooting the various systems. The combination of AUT 112 and 113 prepares the student with job skills for entry into the workforce and the knowledge for successfully completing the Michigan or ASE certification examination required for mechanic licensing.

Prerequisites: ENG 085 and MAT 020**

AUT 113 ELECTRICAL SYSTEMS II (3 CR)

A comprehensive study including hands-on repair of the automobile's electrical system. Service procedures include basic electronics testing using digital multimeters, advanced electrical schematics, chassis wiring, lighting, circuits, instrumentation, power seats, power windows, wiper systems, air bag systems, electrical accessories, and troubleshooting the various systems. The combination of AUT 112 and 113 prepares the student with job skills for entry into the workforce and the knowledge for successfully completing the Michigan or ASE certification examination required for mechanic licensing. Students are required to take the Michigan certification test as an integral part of the course.

*Prerequisites: AUT 112 and ENG 090**

AUT 118 DIESEL FUNDAMENTALS (2 CR)

This course is designed for those who wish to explore modern automotive and light truck diesel engines. This will include a study of diesel operating principles, fuel systems, engine construction, sub-systems, diesel maintenance and diagnosis. Shop time will include disassembly, exploration and reassembly of compact diesel engines.

Prerequisites: ENG 085* and MAT 020*

AUT 160 ALTERNATE FUELS (3 CR)

(SAME AS ALT 270)

This course is an overview of alternative fuels used in automobiles and light trucks. Students learn about various alternate fuels, their effect on exhaust emissions, their effect on the environment, the economic impact of alternate fuels and how they contribute to the reduction of importing foreign oil. Topics include hydrogen, fuel cells, natural gas (CNG & LNG), propane (LP gas), ethanol, methanol and biodiesel.

Prerequisite: ALT 200 or ELT 160

AUT 184 FUNDAMENTALS OF COLLISION REPAIR (3 CR)

This course is a study of the fundamentals of collision repair, vehicle identification, estimating systems, terminology, frontal impact analysis, mechanical systems analysis, steering and suspension damage analysis, restraints, interior, glass, side and rear impact analysis, hazardous materials, personal safety, refinishing safety and corrosion protection. The class includes classroom discussion and hands-on activities in the shop to develop the skills necessary to repair damaged cars. This course prepares the student with job skills for entry into the workforce and the knowledge to successfully complete the Michigan or ASE certification examination required for mechanic licensing.

AUT 186 NON-STRUCTURAL DAMAGE REPAIR (3 CR)

This course is a study of trim and hardware, automotive foams, cosmetic straightening of steel, bolted-on replacement panels, moveable glass, plastic welding, plastic adhesive repair, adhesive bonding, squeeze-type resistance spot welding, welded and adhesively bonded panel replacement, wind-noise and water leaks, cosmetic straightening of aluminum, and replacing aluminum exterior panels. The class includes classroom discussion and hands-on activities in the shop to develop the skills necessary to repair damaged cars. This course prepares the student with job skills for entry into the workforce and the knowledge to successfully complete the Michigan or ASE certification examination required for mechanic licensing.

Prerequisites: AUT 184, ENG 085* and MAT 020* or higher

* You may meet this prerequisite based on your course placement, ACT score or successful college coursework. Visit www.jccmi.edu for current assessment options and requirements.

AUT 188 WELDING & CUTTING STEEL/ALUMINUM (3 CR)

This course is a study of oxyacetylene cutting, plasma arc cutting, steel MIG welding, aluminum TIG welding, and aluminum MIG welding. The class includes classroom discussion and hands-on activities in the shop to develop the skills necessary to repair damaged cars. This course prepares the student with job skills for entry into the workforce and the knowledge to successfully complete the I-CAR welding qualifications tests for steel and aluminum.

Prerequisite: ENG 090*

AUT 190 STRUCTURAL DAMAGE REPAIR (3 CR)

This course is a study of stationary glass, measuring, structural straightening of steel, steel unibody construction, unibody structure repair, steel full frame construction, steel full frame repair, structural straightening of aluminum, structural aluminum design, and structural aluminum repair. The class includes classroom discussion and hands-on activities in the shop to develop the skills necessary to repair damaged cars. This course prepares the student with job skills for entry into the workforce and the knowledge to successfully complete the Michigan or ASE certification examinations required for mechanic licensing.

Prerequisite: AUT 184

AUT 201 ENGINE REPAIR (4 CR)

A comprehensive study including hands-on repair of the automobile engine. Service procedures include cooling system repair, lubrication system repair, intake systems repair, exhaust repair, engine testing, engine replacement, engine disassembly, cleaning and measurement, cylinder head reconditioning, block reconditioning, machining operations, assembly techniques, and troubleshooting the various systems. This course prepares the student with job skills for entry into the workforce and the knowledge for successfully completing the Michigan or ASE certification examination required for mechanic licensing. Students are required to take the Michigan certification test as an integral part of the course.

Prerequisites: ENG 085* and MAT 020* or higher

AUT 202 AUTOMATIC TRANSMISSION (4 CR)

A comprehensive study including hands-on repair of automatic transmissions and transaxles. Service procedures include basic transmission service, transmission pressure testing, scan tool testing, transmission assembly replacement, transmission disassembly, inspection of parts, transmission reassembly, and troubleshooting the various systems. This course prepares the student with job skills for entry into the workforce and the knowledge to successfully complete the Michigan or ASE certification examination required for mechanic licensing. Students are required to take the Michigan certification test as an integral part of the course.

Prerequisites: AUT 101, AUT 234, ENG 085* and MAT 020* or higher

AUT 203 ADVANCED ENGINE PERFORMANCE (2 CR)

Covers general power train diagnosis, computerized power train diagnosis (including OBD II), ignition system diagnosis (including scope analysis), fuel and air induction diagnosis (including 5-gas analysis), emission control systems diagnosis, and I/M failure diagnosis. Students who successfully complete this course will be ready to take the ASE L-1, Auto Advanced Engine Performance Specialist Exam.

Prerequisites: AUT 102, AUT 103 and CIS 116

AUT 204 MANUAL TRANSMISSIONS & DRIVELINES (3 CR)

A comprehensive study including hands-on repair of manual transmissions, manual transaxles and drivelines. Service procedures include transmission service, clutch overhaul, half-shaft repair, driveshaft repair, differential service, axle repair, and troubleshooting the various systems. This course prepares the student with job skills for entry into the workforce and the knowledge to successfully complete the Michigan or ASE certification examination required for mechanic licensing. Students are required to take the Michigan certification test as an integral part of the course.

Prerequisites: AUT 101, AUT 234, ENG 085* and MAT 020* or higher

AUT 210 INTERNSHIP/EXTERNSHIP (4 CR)

This co-op experience is paid on-the-job training. It prepares the student to acquire hands-on job skills and work habits in conjunction with the student's employment site. The student will work at a sponsoring repair shop or dealership approximately three days a week (or to be arranged with instructor's approval) performing a variety of automotive repairs. Visits by the school supervisor provide the basis for evaluation. Students are required to complete a total of one co-op experience in the associate degree program.

Prerequisite: Instructor Permission Required

AUT 211 INTERNSHIP/EXTERNSHIP (4 CR)

This co-op experience is paid on-the-job training. It prepares the student to acquire hands-on job skills and work habits in conjunction with the student's employment site. The student will work at a sponsoring repair shop or dealership approximately three days a week (or to be arranged with instructor's approval) performing a variety of automotive repairs. Visits by the school supervisor provide the basis for evaluation. Students are required to complete a total of one co-op experience in the associate degree program.

Prerequisite: Instructor Permission Required

AUT 212 INTERNSHIP/EXTERNSHIP (4 CR)

This co-op experience is paid on-the-job training. It prepares the student to acquire hands-on job skills and work habits in conjunction with the student's employment site. The student will work at a sponsoring repair shop or dealership approximately three days a week (or to be arranged with instructor's approval) performing a variety of automotive repairs. Visits by the school supervisor provide the basis for evaluation. Students are required to complete a total of one co-op experience in the associate degree program.

Prerequisite: Instructor Permission Required

AUT 214 AUTO LAB EXPERIENCE (4 CR)

Structured lab time to work on auto repair projects in which students have completed coursework and want to expand their knowledge and skills in specific areas previously not covered. May be used as an internal co-op.

Prerequisites: Choose one of the following: AUT 102, AUT 103, AUT 105, AUT 106, AUT 108, AUT 112, AUT 113, AUT 201, AUT 202 or AUT 204

AUT 234 UNDERCAR SERVICE (2 CR)

This course will provide training in MIG welding, exhaust pipe bending and oxyacetylene cutting procedures. This class is designed to prepare the students to pass the ASE XI Specialist Test: Exhaust Systems.

AUT 240 HYBRID TECHNOLOGY (2 CR)

This course will introduce students to hybrid technology through a combination of classroom and lab experiences. Topics include safety procedures when working on the high voltage systems, understanding the various warning lights, understanding normal operation and diagnosis of the various high voltage systems. Lab will include hands-on activities on a hybrid vehicle.

Prerequisites: AUT 102 and AUT 112

AUT 248 DIESEL ENGINE PERFORMANCE (2 CR)

This course is designed to provide an in-depth study of the compact diesel fuel and emission systems. This will include the study of diesel fuel, diesel fuel supply systems, high pressure mechanical and electronic fuel injection systems, computerized engine controls, exhaust gas recirculation valves, exhaust emissions, and soot particle reduction. Shop time will include using diesel fuel systems simulators, scan tool usage for diagnosis of fuel and emission system problems, and work on a diesel-powered pick-up truck.

Prerequisite: AUT 118

AUT 290 PAINT & REFINISH I (3 CR)

This course is a study of detailing, refinishing equipment, VOC regulations, surface preparation, and masking. The class includes classroom discussion and hands-on activities in the shop to develop the skills necessary to refinish cars. This course prepares the student with job skills for entry into the workforce and the knowledge to successfully complete the Michigan or ASE certification examinations required for mechanic licensing.

Prerequisites: ENG 085 and MAT 020* or higher*

AUT 292 PAINT & REFINISH II (3 CR)

This course is a study of color theory, color application, tinting, blending, refinishing of plastics, and the application of basecoat/clearcoat and tri-coat paint systems. The class includes classroom discussion and hands-on activities in the shop to develop the skills necessary to refinish cars. This course prepares the student with job skills for entry into the workforce and the knowledge to successfully complete the Michigan or ASE certification examinations required for mechanic licensing.

Prerequisites: ENG 090 and AUT 290*

AUT 294 COLLISION SHOP LAYOUT (2 CR)

This course introduces students to planning the equipment requirements of a collision repair shop. Topics include compressed air systems, vehicle lifts, and other capital equipment investments needed to efficiently operate a successful collision repair shop. The class includes classroom discussion and hands-on activities to develop the skills necessary to successfully lay out a body shop operation.

Prerequisites: AUT 105, AUT 106, AUT 184, AUT 190 and AUT 290

Biology (BIO)

BIO 110 INTRODUCTORY BIOLOGY (4 CR)

Students will investigate the nature of science and critically analyze scientific data. Basic biological concepts including cancer, biostatistics, organic molecules and nutrition, biotechnology, nutrient cycles, and evolution are presented in the context of current issues. This course includes a discussion component which involves reading, critically evaluating and discussing scientific papers: thus strong college reading and writing skills are recommended. The course is designed for non-science majors and includes a laboratory component.

Prerequisites: ENG 085, ENG 090* and MAT 033* or higher*

BIO 132 HUMAN BIOLOGY (4 CR)

Students focus on the structure and function of the human body, the unity and diversity of life, the nature of scientific inquiry, and the principles and processes of evolution as well as contemporary issues that relate to biology. Course includes a laboratory component which focuses on human anatomy.

Prerequisites: ENG 085 and MAT 020* or higher*

BIO 140 PUBLIC HEALTH AND DISEASE (3 CR)

This lecture/discussion course provides an evidence-based approach to the concepts of public health. Topics covered include infectious and non-infectious diseases along with genetic and environmental factors in health and disease. Students will explore local and national public health resources with an emphasis on how public health data can be used to inform decisions about their own health.

Prerequisite: ENG 085, ENG 090* and MAT 020* or higher*

BIO 158 ENVIRONMENTAL SCIENCE (4 CR)

This course serves as a foundation for environmental science majors. It is also suitable for non-majors interested in environmental topics. Emphasis is placed on laboratory experience, environmental surveys, and class discussions to reinforce scientific principles. Environmental case studies are covered in detail. In laboratory, the students will learn how to analyze quantitative environmental data through application. This class has a laboratory component.

Prerequisites: ENG 085, ENG 090* and MAT 020* or higher*

BIO 161 GENERAL BIOLOGY I (4 CR)

Biology 161 is the first semester of a one-year general biology experience intended for science majors or pre-professional students. This course covers nature of science, a survey of the major groups of living organisms (bacteria, fungi, plants and animals), the process and evidence for evolution, and the fundamentals of ecology. It provides the foundation for upper level biology courses. This course includes a laboratory component.

Prerequisites: ENG 090 and MAT 033* or higher*

BIO 162 GENERAL BIOLOGY II (4 CR)

Biology 162 is the second semester of a one-year general biology experience intended for science majors or pre-professional students. This course covers the chemical basis of life, cell structure and function, photosynthesis and cellular respiration, molecular and Mendelian genetics, cell division, gene regulation and biotechnology. It provides the foundation for upper level biology courses. This course includes a laboratory component. Successful completion of BIO 161 is recommended prior to enrollment.

Prerequisite: CEM 131 or higher

BIO 220 MICROBIOLOGY (4 CR)

Basic structure and function of microorganisms with special emphasis on recent advances in microbiology, pathogens, disease, control and immunity. Strong biology background recommended. Course includes a laboratory component.

Prerequisites: ENG 085 and MAT 020* or higher*

BIO 231 GENERAL BOTANY (4 CR)

(Formerly BIO 151)

Emphasizes the development, anatomy, physiology and evolution of angiosperms. A survey of the plant kingdom with representative life cycles stresses relationships among plant groups. Course includes a laboratory component.

Prerequisite: BIO 110, BIO 161 or BIO 162

BIO 232 GENERAL ZOOLOGY (4 CR) (Formerly BIO 152)

A comparative study of the anatomical and evolutionary relationships of the major animal phyla with emphasis on development, structure and function of vertebrate systems. Course includes a laboratory component.

Prerequisite: BIO 110, BIO 161 or BIO 162

BIO 253 HUMAN ANATOMY AND PHYSIOLOGY I (4 CR)

This is the first course of a two-semester course sequence in which students study the anatomy and physiology of the human body. The course includes introductions to basic chemistry, biology and histology and extends to the survey of the integumentary, skeletal, muscular and nervous systems. This course includes a laboratory component in which students are responsible for performing dissections and making original observations on dissected material. The laboratory experience culminates with the use of a plastinated human specimen for observation. A strong background in biology and/or chemistry is highly recommended.

Prerequisites: ENG 085 and MAT 020* or higher*

BIO 254 HUMAN ANATOMY AND PHYSIOLOGY II (4 CR)

This is the second course of a two-semester course sequence in which students study the anatomy and physiology of the human body. The course includes the autonomic nervous system, sensory, motor and integrative systems, special senses, endocrine system, cardiovascular systems, lymphatic system and immunity, respiratory systems, digestive system, metabolism and nutrition, urinary system and reproductive systems. This course includes a laboratory component in which students are responsible for performing dissections and making original observations on dissected material. The laboratory experience culminates with the use of a plastinated human specimen for observation. Because physiological processes are based on the principles of chemistry, prior chemistry coursework is strongly recommended for this course.

Prerequisite: BIO 253

BIO 258 FIELD ECOLOGY (5 CR)

This course is designed to provide hands-on field research experiences in ecology and environmental science. Students will be introduced to quantitative field science methodology, natural history, current research issues, and will participate in data collection for ongoing research projects. The ecological concepts that underlie modern hypothesis tests in ecology will be explored through discussions, readings and field research activities. Conducting regionally-based ecological projects with ecological mathematical methods are a major component of this course. People highly allergic to poison ivy, insects, molds or pollen need to take precautionary steps during field studies.

Prerequisites: ENG 085, ENG 090* and MTH 033* or higher*

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Business (BUA)

BUA 100 CONTEMPORARY BUSINESS (3 CR)

(FORMERLY BUS 131)

As business speeds into the 21st century, new techniques, population shifts, and shrinking global barriers are altering the world at a frantic pace. Learn about the range of business careers available and the daily decisions, tasks and challenges that they face. Emphasis is placed upon developing a vocabulary of business terminology, teamwork, quality, social responsibility and cultural diversity. Understand how management, marketing, accounting, and human resource management work together to provide ethical competitive advantages for firms. This knowledge can help you enhance your career potential.

Prerequisites: CIS 095, ENG 085* and ENG 090**

BUA 110 INTRODUCTION TO WALL STREET (1 CR)

Designed to help existing or potential investors keep abreast of investment opportunities in today's changing financial world. Students are taught the mechanics of investing, how to analyze risk and return, and strategies to making sound investment decisions related to the stock market. The organization and function of the stock market, brokerage firms, and financial information on the Internet are examined.

Prerequisites: CIS 095 and ENG 085**

BUA 111 PERSONAL FINANCE (3 CR)

Provides a fundamental knowledge of financial concerns including financial services, stocks, bonds, budgeting, insurance, real estate, estate and tax planning, buying on credit, borrowing, saving, investing intelligently, and retirement. Analysis of personal objectives to financial planning will be discussed and put into practice.

Prerequisites: CIS 095, ENG 085* and ENG 090**

BUA 120 HUMAN RELATIONS IN BUSINESS (3 CR)

Effective human relations are an indispensable tool in developing a successful professional presence in today's world. Topics include self-understanding, as well as the understanding of others, motivation, productivity, morale, conflict and change, stress, ethics, diversity, goal setting, the power of positive reinforcement, image building, emotional control, assertiveness, effective communication and different leadership styles.

Prerequisites: CIS 095, ENG 085* and ENG 090**

BUA 121 LEADERSHIP (3 CR)

Both knowledge and behavior contribute to effective leadership skills needed to enhance the contribution of your team. Students explore topics including shared vision and values, team building, and decision making. You will study leadership theory in ways that encourage development of your leadership skills, including effective use of power and influence, motivational tools, personality assessment, team communication, role modeling, and performance appraisals.

Prerequisites: CIS 095, ENG 085* and ENG 090**

BUA 122 SUCCESSFUL SMALL BUSINESS (3 CR)

Do you have what it takes to own your own business? Discover that, as well as sources of financing, forms of legal ownership, niche marketing, and most importantly, how to avoid business failure.

Prerequisites: CIS 095, ENG 085* and ENG 090**

BUA 130 CUSTOMER SERVICE (3 CR)

In the face of change, an uncertain economy, and intensive competition, the student will learn how to create an unexpected, highly evolving experience, to create customer loyalty and compelling word of mouth customers. The core element of service quality will be applied to both people-centered and technology-centered businesses, industries and organizations. The ultimate goal of this course is to help improve students' abilities to communicate effectively with internal and external customers.

Prerequisites: CIS 095, ENG 085* and ENG 090**

BUA 131 EFFECTIVE SELLING (3 CR)

This class covers the basic fundamentals of selling, adaptable to any product or potential customer. Skills learned include satisfying customer needs, recognizing individual motives for purchase, sales psychology, business etiquette and developing a long-term consultative relationship with customers. Persuasive sales presentations are developed and delivered using the steps of the selling process.

Prerequisites: CIS 095, ENG 085* and ENG 090**

BUA 220 PRINCIPLES OF MANAGEMENT (3 CR)

This management course exposes students to the dynamics of the changing world. Topics such as management functions/ processes, quality, leadership styles, power, global issues, and the challenges and opportunities of diversity are included. Emphasis is placed on ethics, decision making, effective communication, evaluating employees, motivational tools, organizational design, environmental scanning, supervising groups, controlling quality, productivity improvement, managing change and conflict, labor relations and time management.

Prerequisites: CIS 095, ENG 085* and ENG 090**

BUA 221 HUMAN RESOURCES MANAGEMENT (3 CR)

Create and maintain a desirable and productive work place by applying management skills with emphasis on improving performance and career development. Topics include: employment law, recruitment and selection, placement techniques, interview methods, job analysis, staffing, training and development, performance appraisals, team building, benefit administration, government regulation, compensation systems, health and safety, and labor-management issues.

Prerequisites: CIS 095, ENG 085* and ENG 090**

BUA 230 PRINCIPLES OF MARKETING (3 CR)

Students analyze the marketplace to identify customer wants and needs and develop effective strategies to satisfy them. Emphasis is placed on research, marketing environments, strategic planning, buyer behavior, evaluating key competitors, and the marketing functions of product or service planning, pricing, promotion and distribution.

Prerequisites: CIS 095, ENG 085* and ENG 090**

BUA 231 ADVERTISING, PROMOTION & PUBLIC RELATIONS (3 CR)

Students study the principles and practices of numerous promotional tools used in marketing communications. Topics include creation of advertising, media strategies, message appeals, plus the use of specialty advertising, sales promotion and public relations to help sell goods, services and ideas.

Prerequisites: CIS 095, ENG 085* and ENG 090**

BUA 245 INTERNSHIP/EXTERNSHIP (3 CR)

Students will have meaningful work experience with an appropriate company. The company and job must be approved by the supervising faculty member.

BUA 250 BUSINESS LAW I (3 CR)

This course offers an introduction to law and the legal system, dispute resolution and courts, business ethics, torts, contracts, sales and leases of goods, and negotiable instruments.

Prerequisites: CIS 095, ENG 085* and ENG 090**

BUA 251 BUSINESS LAW II (3 CR)

The student will learn the law governing the forms of business organization, including agency, partnerships, corporations, and real and personal property.

Prerequisite: BUA 250

BUA 420 PROJECT MANAGEMENT AND LEADERSHIP (3 CR)

Students will experience and complete the entire project management process, from start to finish. Each student will create a project proposal, develop scope definitions, determine schedule, allocate resources, establish cost predictions, manage risk and critical path threats, communicate with stakeholders and closeout and document the project. Additional topics include building and leading project teams, utilizing industry project management software, and following the Project Management Body of Knowledge (PMBOK) framework.

Prerequisites: PHL 232, CIS 101 or CIS 201, ENG 131, and MAT 131 or higher*

Computer Assisted Drafting (CAD)

CAD 151 INTRODUCTION TO CAD 1 (3 CR)

This course covers the applications in which the phases of computer graphics are involved. A general introduction to drafting application will be presented. Recommended: Windows® and blue print reading experience.

*Prerequisites: MFG 105 and ENG 085**

CAD 251 ADVANCED CAD (4 CR)

This is a second level CAD based design course that will expand the student's knowledge of 3D CAD modeling, 3D assemblies, and more complex CAD based designs. 3D Stereolithographic printers and other prototyping equipment will be used to construct design projects.

Prerequisite: CAD 151

Climate Control Technology (CCT)

CCT 121 INTRODUCTION TO HVAC (3 CR)

The course will introduce the student to a variety of professions and work opportunities in the HVAC field. Students will also review the tools of the trade, safety practices, a basic introduction to components of heating and air conditioning equipment, heat transfer, psychometrics and air quality.

*Prerequisite: ENG 085**

CCT 160 FUNDAMENTALS OF ENERGY EFFICIENCY (2 CR)

(Same as ALT 210)

This course will explore the fundamentals of designing and maintaining an energy efficient building to reduce a homeowner or business's cost of utilities. Students will learn techniques to identify wasted energy and the methods needed to modernize an energy inefficient home.

Prerequisites: ENG 085 and MAT 020* or higher*

CCT 162 ENERGY AUDIT TECHNIQUES (3 CR)

(Same as ALT 215)

This course will explore the necessary knowledge and skills to conduct a building energy audit. The class will learn how to operate the latest building science technology and equipment to identify heating, cooling, base load, and air leakage problems in a building.

Prerequisites: CCT 160 and MAT 033 or higher*

CCT 165 GEOTHERMAL ENERGY & SYSTEMS (2 CR)

(Same as ALT 260)

This course will explore the basics of geothermal energy production, theory, and technology. Residential system installation, maintenance, and problem diagnosis will also be covered.

Prerequisites: CCT 121 and CCT 131 or ELT 120

CCT 167 SOLAR THERMAL ENERGY & SYSTEMS (2 CR)

(Same as ALT 265)

This course will explore the basics of solar thermal energy technology and application. The class will also cover system installation, maintenance and problem diagnosis.

Prerequisites: CCT 121 and CCT 131 or ELT 120

Chemistry (CEM)

CEM 131 FUNDAMENTALS OF CHEMISTRY (4 CR)

Fills requirement for some non-science majors. Provides background for CEM 141 for those with no recent high school chemistry. Fundamental principles of chemistry such as states of matter, simple atomic and molecular structure, and the periodic classification of elements. The study of water emphasizes the properties of solutions and acid-base relations. Course includes a laboratory component.

Prerequisites: ENG 085 and MAT 033* or higher*

** You may meet this prerequisite based on your course placement, ACT score or successful college coursework. Visit www.jccmi.edu for current assessment options and requirements.*

CEM 132 FUNDAMENTALS OF ORGANIC & BIOLOGICAL CHEMISTRY (4 CR)

This course is an extension of material covered in CEM 131. It is required in many bachelor's degree programs, including nursing. Organic topics include the structure, physical properties and chemical behavior of the major classes of organic compounds. The structure, function, formation and reactions of carbohydrates, fats, proteins, and nucleic acids are covered, including enzymes, chemical messengers, and biochemical energy production. Course includes a laboratory component.

Prerequisite: CEM 131 or CEM 137 or CEM 141

CEM 137 CHEMISTRY OF LIFE (4 CR)

This course meets the chemistry requirements for elementary education and programs requiring a lab science course. It introduces the fundamental principles of general chemistry (structure of atoms and compounds, states, energy, equations, radioactivity, solutions and acids/bases), organic (structure and properties of major classes), and biochemistry (carbohydrates, proteins, lipids, metabolism and body fluids).

Prerequisites: ENG 085 and MAT 033* or higher*

CEM 141 GENERAL CHEMISTRY I (5 CR)

This course is required for most sciences, engineering, and pre-professional health majors. Students who are required to take organic chemistry for their major should enroll in CEM 141 during their first semester. Topics include atomic and molecular structure, periodicity, chemical bonding, states of matter, kinetic molecular theory and stoichiometry. Course includes a laboratory component.

Prerequisites: CIS 095, ENG 085*, ENG 090* and MAT 131* or higher*

CEM 142 GENERAL CHEMISTRY II (5 CR)

This course is the second semester of general chemistry and extends material covered in CEM 141. Covered concepts include chemical thermodynamics, electrochemical reactions, reaction kinetics, acid-base theories, nuclear chemistry, and aqueous solutions with emphasis on equilibrium. Experiments include quantitative methods, stoichiometry, colorimetry, and gravimetric analysis. Course includes a laboratory component.

Prerequisite: CEM 141

CEM 241 ORGANIC CHEMISTRY I (5 CR)

Comprehensive study of the major classes of organic compounds, their structures and reactions. The stereo-chemical properties and spectra (IR and NMR) of molecules and their mechanisms of reactions are stressed. The laboratory experiments demonstrate techniques used in organic reactions, syntheses illustrating types of reactions, analysis of major classes of compounds, and kinetic studies.

Prerequisite: CEM 142

CEM 242 ORGANIC CHEMISTRY II (5 CR)

A continuation of CEM 241. Course includes a laboratory component.

Prerequisite: CEM 241

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Computer Information Systems (CIS)

CIS 090 COMPUTER BASICS (2 CR)

This course introduces basic computer concepts and components. Topics include beginning computer concepts, identifying hardware, understanding software, using Windows® operating system, learning the keyboard, understanding the World Wide Web and conducting Internet searches, and introduction to e-mail communications. Students will apply concepts to real-life scenarios through active-learning strategies.

CIS 095 COMPUTER LITERACY (2 CR)

This course covers computer concepts, storage media, file management, word processing, online learning systems, e-mailing with attachments, and keyboarding. Students will apply concepts to real-life scenarios through active-learning strategies.

*Prerequisite: CIS 090**

CIS 101 INTRODUCTION TO COMPUTER SYSTEMS (3 CR)

Enhance computer knowledge. Course covers computer system concepts with an emphasis on several software applications. Typing ability necessary to be successful in this class.

Prerequisites: CIS 095, ENG 085*, ENG 090* and MAT 020* or higher*

CIS 103 LEARNING THE KEYBOARD (1 CR)

(Formerly CIS 010)

Learn keyboard fundamentals for success in computer-related programs. The students learn proper finger placement and key locations on a microcomputer.

CIS 104 KEYBOARD SPEED/ACCURACY (1 CR)

(Formerly CIS 011)

At course entry, your keyboarding speed and accuracy is measured. A diagnosis of your specific keyboarding problem is made. Your skill improvement goals will be established and appropriate practice lessons selected. Periodic program check timings will be administered to measure your progress.

CIS 105 MICROSOFT® WINDOWS® WORKSHOP (1 CR)
(Formerly CIS 012)

This course provides a basic introduction to Microsoft® Windows®. The fundamentals of Microsoft Windows will be covered which include the start menu, desktop, launching an application program and using help and support. File and folder management, control panel and using the taskbar will be introduced.

CIS 106 OPERATING SYSTEM: UNIX (1 CR)
(Formerly CIS 013)

This course is an overview of the UNIX operating system, commands, batch files and other basic topics. Typing ability is necessary to be successful in this course.

CIS 107 MICROSOFT® DOS® WORKSHOP (1 CR)
(Formerly CIS 016)

Learn the IBM® (or equivalent) personal computer and its components. This course covers the operating systems background, Disk Operating System (DOS®) commands, tree structure, EDLIN, Microsoft® DOS®.

CIS 110 KEYBOARDING/DOCUMENT PROCESSING (3 CR)

Students are introduced to the computer keyboard and are given instruction in proper typing technique. Students are also introduced to basic Microsoft® Word® operations to create business letters and envelopes, business and academic reports, tables and other business and academic related documents

CIS 111 INTERMEDIATE KEYBOARD/TYPING (3 CR)

Learn production typing including tables, letters, manuscripts, reports and business forms. Students learn on microcomputer using word processing software. Advanced word processing functions are included.

Prerequisite: CIS 110

CIS 112 MICROSOFT® OFFICE® PROFESSIONAL INTRODUCTION (3 CR)

Introduction and skill development in the four applications of Microsoft® Office® (Microsoft® Word®, Excel®, Access®, PowerPoint®), plus the full integration of all four packages.

CIS 114 MICROSOFT® WORD WORKSHOP-WINDOWS® (1 CR)
(Formerly CIS 020)

Learn to process documents using Microsoft® Word®, including letters, memos and reports. Typing ability is necessary to be successful in this course.

CIS 115 MICROSOFT® EXCEL® WORKSHOP - WINDOWS® (1 CR)
(Formerly CIS 021)

Create business applications using the Excel® spreadsheet within the Windows® graphical user interface (GUI). This course covers basic commands, cell ranges, formulas, and mathematical, financial and statistical functions.

CIS 116 MICROSOFT® ACCESS® WORKSHOP - WINDOWS® (1 CR)
(Formerly CIS 022)

Learn how to create, query, maintain present data as reports and forms, include graphs, tables and clip art in printouts, and use macros to create application systems for databases.

CIS 117 MICROSOFT® OUTLOOK® WORKSHOP (1 CR)
(Formerly CIS 024)

Learn to use Outlook® components to create and use the calendar feature to schedule meetings and multiple day events, establish a "contacts" database, keep journals, notes and use the task manager for prioritizing jobs. This is an optional component of the Microsoft® Office® User Specialist Expert certification tests. Typing ability necessary to be successful in this course.

CIS 118 MICROSOFT® PUBLISHER® WINDOWS® (2 CR)

This course presents design techniques and the proper procedures necessary to create electronic documents in Microsoft® Publisher®. Students explore the use of Publisher's® extensive design templates to create documents such as flyers, brochures and newsletters. Publications are also created from scratch. An emphasis is placed on good design principles and the creative aspects of desktop publishing.

Prerequisites: ENG 085 and ENG 090**

CIS 119 MICROSOFT® POWERPOINT® - WINDOWS® (2 CR)

Students will learn how to create electronic presentations using design templates, slide layouts, the outline tab, clip art, from other programs such as Microsoft® Word® and how to enhance slideshows with visual elements in presentation formats. Student will also learn how to create presentations for the web, self-running presentations, presentations containing interactive documents and how to collaborate work groups. Keyboarding skills are essential.

Prerequisites: ENG 085 and ENG 090**

CIS 120 MICROSOFT® WORD® COMPREHENSIVE - WINDOWS® (3 CR)

Produce, store and revise letters, memos, tables and reports using Microsoft® Word®. Headers, footers, mail merge, document assembly, grammar and spell checker, thesaurus, and outlining are covered. Keyboarding skills are essential.

Prerequisites: ENG 085 and ENG 090**

** You may meet this prerequisite based on your course placement, ACT score or successful college coursework. Visit www.jccmi.edu for current assessment options and requirements.*

CIS 121 MICROSOFT® EXCEL® COMPREHENSIVE - WINDOWS® (3 CR)

Learn Excel® components: charts, creating workbooks, using drawing tools, formatting and auditing worksheets, functions, Internet and intranet documents, modifying and printing workbooks, ranges, database queries, importing and exporting data, macros, working with multiple workbooks, working with existing and creating new templates, and advanced workgroup functions. Keyboarding skills are essential.

Prerequisites: ENG 085, ENG 090* and MAT 020* or higher*

CIS 122 MICROSOFT® ACCESS® COMPREHENSIVE - WINDOWS® (3 CR)

Planning, creating and displaying databases, sorting and report preparation, data entry screens, data validation and selection, and multiple file operations. Keyboarding skills are essential.

Prerequisites: ENG 085, ENG 090* and MAT 020* or higher*

CIS 125 MICROSOFT® EXPRESSION® WEB (1 CR)

This course will show how to create web sites with the Microsoft® Expression® Web program. Topics will include how to create a web site, managing and publishing a web site, and how to use views, table and frames. Previous keyboarding experience is necessary to be successful in this course.

*Prerequisite: CIS 095**

CIS 126 DIGITAL DESIGN FUNDAMENTALS (3 CR)

Students explore fundamental methods used to compose persuasive digital layouts. Strategies in aesthetics, personal methodology, and industry-standard practices are performed with the intent to deliver a clear, unique and proficient message.

Prerequisites: MAT 131, MAT 133 or MAT 135 (MAT 135 preferred), and ENT 085 and ENG 090**

CIS 127 INTRODUCTION TO CREATIVE SOFTWARE (3 CR)

Understanding the full potential and limitations of software is essential to the success of graphic design students. Introduction to Creative Software is an entry-level course that takes the student who is new to graphic design and creative careers into this dynamic industry and lets them explore common software used.

*Prerequisite: ENG 085**

CIS 128 TYPOGRAPHY & LAYOUT (3 CR)

Learn principles of type identification, selection and use in the professional rendering of comprehensive layouts. Utilization of tools, materials, and techniques of rendering emphasized.

*Prerequisite: CIS 095**

CIS 129 INTRODUCTION TO PRODUCTION FOR THE DESIGNER (3 CR)

This course introduces the graphic design student to the fundamentals of production printing processes.

*Prerequisite: ENG 085**

CIS 131 METHODS IN 3-D PROTOTYPING (1 CR)

Students propose concept development and build three-dimensional product mock-ups. Dexterity, craftsmanship and implementation using innovative logistical methods are practiced and delivered.

*Prerequisite: ENG 085**

CIS 132 GRAPHIC ILLUSTRATION (ADOBE® ILLUSTRATOR®) (3 CR)

Learn how to create professional looking illustrations using Adobe® Illustrator®. This course introduces student to techniques used by professional designers and illustrators.

*Prerequisite: CIS 095**

CIS 133 BRAND IDENTITY DESIGN (1 CR)

This course introduces students to common contemporary practices of corporate brand identity design. Review and discussion of brand-building concepts are researched and analyzed.

*Prerequisite: ENG 085**

CIS 134 GRAPHIC IMAGING (ADOBE® PHOTOSHOP®) (3 CR)

Learn the intricacies of scanning and editing images for producing practical and expressive images on a computer using Adobe® PhotoShop® software.

CIS 135 OPEN SOURCE WEB DESIGN (1 CR)

This course will explore several open source web design software programs available, their risks and advantages in the web development arena. Students will create an eCommerce website, learn to manage the site using open source utilities available and discover strategies for security of website information and eCommerce transactions.

CIS 136 INTEGRATED DESIGN I (ADOBE® INDESIGN®) (3 CR)

Learn the basics of desktop publishing using Adobe® InDesign®. Students use computers and laser printers to create professional-looking publications that incorporate illustrations and bitmap graphics.

*Prerequisite: CIS 095**

CIS 137 DIGITAL PHOTOGRAPHY I (3 CR)*(Same as ART 137)*

This course provides the necessary information and assistance in using a digital camera to capture, edit and manipulate top quality images for both the Internet and printing. Includes techniques on layout, composition, message and color. Students supply their own camera.

CIS 138 IMAGE EDITING APPLICATIONS (1 CR)

Students will be exposed to current applications and technical aspects of image manipulation in a variety of contexts. They will become familiar with applications through research, demonstrations, and structured exercises as well as open-ended assignments.

*Prerequisite: ENG 085**

CIS 143 HTML (2 CR)

Create web pages using HTML. Students will learn techniques and strategies to build and promote successful web pages. Features such as columns, frames, image maps and META tags will be covered in this course.

CIS 147 WEB PAGE DESIGN I (DREAMWEAVER®) (1 CR)*(Formerly CIS 045)*

This course covers the fundamental concepts of web page design using Adobe® Dreamweaver®. This course will instruct students in all the basic functions of Adobe® Dreamweaver® in regards to understanding how to get a website up and running.

CIS 158 PROGRAMMING LOGIC (3 CR)

Students explore the development of the logic and theory for writing business programs that control the operation of a computer. Course covers the development of both structured design and object-oriented design. Topics include control structures, arrays, data validation, testing and debugging.

*Prerequisite: CIS 095**

CIS 160 PROGRAMMING IN VISUAL BASIC.NET (3 CR)

This course introduces students to principles and concepts of programming in a Windows® environment using the Visual Basic.NET programming language. Students learn to develop business applications by designing and creating a user interface and writing the necessary procedures using both structured and object-oriented design. Topics covered include objects, variables, menus, arrays, file input/output, OLE methods and debugging. Recommended computer programming majors take CIS 158 prior to this course.

Prerequisites: CIS 095 and MAT 020* or higher*

CIS 165 JAVA PROGRAMMING (3 CR)

Students use procedural and object-oriented programming capabilities to design, develop, and test computer programs. Topics covered include control structures, methods, object-oriented programming, classes, applets and user interfaces.

Prerequisites: CIS 095 and MAT 033* or higher*

CIS 170 PROGRAMMING IN C++ (3 CR)*(SAME AS CPS 177)*

Students study digital computing systems and how they are used to solve problems. Students use procedural and object-oriented programming capabilities to design, develop, and test computer programs. Topics covered include program development, functions, control structures, text file operations, classes, recursion, arrays and pointers.

Prerequisites: CIS 095 and MAT 033* or higher*

CIS 171 3D MODELING I (4 CR)

Students will begin learning the basic low polygon modeling techniques. Special emphasis on character design and environmental modeling will be the key to this class along with a flow into topics of human topology. This course is perfect for an artist or a technical-minded individual.

*Prerequisite: CIS 095**

CIS 172 LIGHTING AND TEXTURING (4 CR)

Students will learn how to set up 3D environments, dynamic and static lighting and be able to use mappings to manipulate that light on a 3D surface. Material and surface terminology will also be taught. Students will be introduced to 2D matte painting techniques for environmental backdrops.

Prerequisite: CIS 171

CIS 173 ANIMATION I (4 CR)

This core class of animation introduces students to moving and animation 3D characters. Using industry standard software, students will translate muscle and bone structure. Various character rigs will be introduced so that the 3D characters will move in both forward and inverse kinematics.

Prerequisite: CIS 171

CIS 174 PC REPAIR/A+ HARDWARE COMPONENT (3 CR)

Course covers basic computer theory, logic, technological evolution, fundamental PC components, I/O peripheral identification, implementation, functionality, and printer fundamentals/types/diagnostics/troubleshooting/basic repair.

CIS 175 PC REPAIR/A+ SOFTWARE COMPONENT (3 CR)

Students gain familiarization with basic DOS functionality and manipulation for diagnostics, troubleshooting and repair with Windows® O/S. Installation, configuration, troubleshooting, diagnostics, upgrade familiarity with necessary Microsoft® product for A+ certification.

Prerequisite: CIS 174

CIS 176 A+ CERTIFICATION EXAM PREPARATION (1 CR)

Focus on A+ core exam module component essentials/fundamentals, includes real-time test environment and materials.

Prerequisite: CIS 175

CIS 179 NETWORK+ CERTIFICATION EXAM PREPARATION (1 CR)

Focus on Network+ core exam module component essentials/fundamentals to include real-time test environment and materials.

Prerequisite: CNS 101

CIS 201 ADVANCED INFORMATION TECHNOLOGIES (3 CR)
(Same as ECM 201)

This course enhances electronic communication skills and computer concepts essential to using current advanced information technologies. Topics include web collaboration, web conferencing, web 2.0 applications, social media, mobile computing, file conversions and cross-platform compatibility.

Prerequisites: ENG 085, ENG 090* and CIS 101**

CIS 203 INTRODUCTION TO PROBABILITY & STATISTICS (4 CR)

(Same as MAT 133 and PSY 144)

This course is an introduction to experimental design, data representation, basic descriptive statistics, probability theorems, frequency distributions and functions, binomial and normal probability distributions and functions, probability density functions, hypothesis testing, statistical inference, Chi-square analysis, linear regression, correlation and application of the above in making informed, data driven decisions in real-world contexts. Both graphing calculators and computer-based statistical software (Microsoft® Excel®) will be used. If the prerequisite is more than two years old, then the mathematics department recommends the course placement exam be taken or the prerequisite be retaken to ensure the success of the student.

Prerequisite: MAT 033 or MAT 131* or higher*

** You may meet this prerequisite based on your course placement, ACT score or successful college coursework. Visit www.jccmi.edu for current assessment options and requirements.*

CIS 210 OFFICE ADMINISTRATION SYSTEMS (4 CR)

Develop and integrate administrative support skills in communication, information technologies, administrative procedures and problem solving. Topics include: records management, information/ communication systems, including electronic, space management and ergonomics, quality and productivity improvement techniques, meeting/travel planning, records preparation/presentation and employment skills. Keyboarding skills are essential.

Prerequisite: CIS 101

CIS 230 PRACTICUM IN PRINTING (4 CR)

Students receive hands-on introduction on how screen and offset printing works. The class will be project-oriented.

Prerequisite: CIS 101

CIS 232 INTEGRATED DESIGN II (ADOBE® INDESIGN®) (3 CR)

Students will design creative publications via Adobe® InDesign® while integrating designs from Adobe® PhotoShop® and Illustrator®. Topics in this class include: page layouts, styles, layers, color separation and interactive PDFs.

Prerequisites: CIS 128 and CIS 132 or CIS 136

CIS 234 GRAPHIC TECHNOLOGY APPLICATIONS (3 CR)

Students prepare for career opportunities by defining areas of employment and identifying prospective employers in the graphic design profession. Students also create a professional portfolio to be used for employment interview purposes.

Prerequisites: CIS 128 and CIS 132

CIS 237 DIGITAL PHOTOGRAPHY II (3 CR)

(Same as ART 237)

This course provides the opportunity to refine and extend the skills of photographic seeing. Personal skills in digital photography will be used to explore a complete body of work. Students will be using Photoshop® CS5 to edit and explore their creative outlets further. Students' individual personal goals will be set and executed during the semester.

Prerequisite: ART 137 or CIS 137

CIS 243 WEB ANIMATION (3 CR)

Design fully interactive sites using Adobe® Flash®. Students will draw vector graphics, use key tools to produce animations, and create an activity that drives dynamic web sites. Students will also produce multimedia presentations.

Prerequisites: CIS 101 and CIS 143

CIS 244 WEB PROGRAMMING (3 CR)

Students will learn to design and maintain interactive and dynamic web applications within a server-based scripting environment.

Prerequisites: CIS 101, CIS 143 and CIS 158

CIS 245 INTERNSHIP/EXTERNSHIP (3 CR)

This course will provide comprehensive work experience to assist students in the development of essential skills to be successful in a chosen career. The position must be obtained by the student and approved by the department before registration is permitted.

Prerequisite: Instructor Permission Required.

CIS 246 WEB INTEGRATION WITH DATABASES (3 CR)

Students will experience different approaches for creating web pages that interact with databases. This course will define how web sites are being used to support electronic commerce applications.

Prerequisites: CIS 101, CIS 122 and CIS 244

CIS 247 WEB PAGE DESIGN II (DREAMWEAVER®) (3 CR)

(Formerly CIS 145)

This course covers advanced concepts of web page design using Dreamweaver®. This course will teach students advanced design techniques to add efficiency, interactivity, and visual interest to their Internet web site.

Prerequisite: CIS 147

CIS 260 ADVANCED VISUAL BASIC.NET (3 CR)

Further study of Visual Basic.NET. Students learn the advanced features of Visual Basic including writing relational database programs, web services, data structures and user controls.

Prerequisite: CIS 160

CIS 270 ADVANCED C++ PROGRAMMING (3 CR)

Hands-on programming course using the Visual C++ language. Object-oriented programming concepts, input handling, the Microsoft® Foundation Class, and using the Windows® programming interface with Visual C++ tools are some of the topics discussed.

Prerequisite: CIS 170

CIS 271 3D MODELING II (4 CR)

This course builds from the previous 3D modeling course. Students will design characters with even greater detail and polygon levels that reach over a million. Topics of human anatomy, muscle structure and topology will be introduced.

Prerequisite: CIS 171

CIS 272 COMPUTER GAMING FUNDAMENTALS (3 CR)

Game engine fundamental workflows will be introduced from a design perspective. Using a pre-made game engine, students will import static and animated props into an environment to create maps and levels.

Prerequisites: CIS 172, CIS 173 and CIS 271

CIS 273 SYSTEMS CONCEPTS AND DESIGN (3 CR)

Students will design a system, prepare the related documentation and required programs, using an existing business as a model. Course covers flow charting a system, defining problems, and preparing new forms. Students determine a desirable file structure.

Prerequisites: CIS 101 and CIS 160 or CIS 165 or CIS 170*

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Communications (COM)

COM 231 COMMUNICATION FUNDAMENTALS (3 CR)

(Formerly SPH 231)

Students will learn the basic principles of speech communication including speech development and delivery, interpersonal message, non-verbal messages, and small group dynamics. The course is designed to prepare students to be effective communicators in a diverse global society. Student speeches will be evaluated for effectiveness.

Prerequisites: ENG 085 and ENG 090**

COM 233 ARGUMENTATION & DEBATE (3 CR)

Students are provided theory and practice in debate, emphasizing principles of research, logical reasoning, and oral presentation of reasoned discourse in group situations.

Prerequisite: COM 231

COM 234 PUBLIC ADDRESS (3 CR)

(Formerly SPH 234)

Explore the role of the speaker, audience, occasion and the message. Opportunities are offered for participation in all general purposes of speech plus some special occasion speeches. Delivery methods are impromptu, extemporaneous, manuscript and memorized. Outlining, organization, delivery technique and other theories of public address stressed.

Prerequisites: ENG 085 and ENG 090**

COM 240 INTERPERSONAL COMMUNICATION (3 CR)
(Formerly SPH 240)

Students will learn to improve communication in one-on-one and small group situations. In this course, students will examine basic verbal and non-verbal elements affecting communication between individuals in family, peer group and work contexts. Specific units of discussion include intrapersonal perspective, conflict resolution, self-disclosure, message generation, intercultural messages and non-verbal communication.

Prerequisites: ENG 085 and ENG 090**

COM 250 INTERCULTURAL COMMUNICATION (3 CR)
(Students cannot receive credit for both COM 250 and COM 350)

This course will explore how diverse cultural orientations influence the way we perceive and interact with an increasingly culturally diverse world. We will discuss the causes of intercultural conflicts in different communication settings (interpersonal, small group, school, workplace and global) and how to manage them effectively.

Prerequisites: ENG 085 and ENG 090**

COM 350 INTERCULTURAL COMMUNICATION FOR MANAGEMENT (3 CR)
(Students cannot receive credit for both COM 250 and COM 350)

This course will explore how diverse cultural orientations influence the way we perceive and interact with an increasingly culturally diverse world. We will discuss the causes of intercultural conflicts in different communication settings (interpersonal, small group, school, workplace and global) and how to manage them effectively. This course is tailored for those students seeking management/leadership positions and the unique needs of cross-cultural communication in those areas.

Prerequisites: COM 231 or COM 240 and ENG 131

Computer Networking And Security (CNS)

CNS 101 NETWORK FUNDAMENTALS/NETWORK+ (4 CR)

This course introduces students to fundamental networking concepts and technologies. It is the first of four courses that help prepare students for the Cisco CCNA certification exam. The course materials will assist in developing the skills necessary to plan and implement small networks across a range of applications. It also helps prepare the student for the CompTIA Network+ certification exam.

CNS 102 ROUTING PROTOCOLS & CONCEPTS (3 CR)

This course is the second of four courses that help prepare students for the Cisco CCNA certification exam. It covers the routing concepts introduced in CNS 101. The goal is to develop an understanding of how a router learns about remote networks and determines the best path to those networks. This course includes both static routing and dynamic routing protocols.

Prerequisite: CNS 101

CNS 103 LAN SWITCHING & WIRELESS (3 CR)

This course is the third of four courses that help prepare students for the Cisco CCNA certification exam. It covers the switching and wireless concepts introduced in CNS 101 in more depth. The goal is to develop an understanding of how switches are interconnected and configured to provide network access to LAN users. This course also teaches how to integrate wireless devices into a LAN.

Prerequisite: CNS 101

CNS 104 ACCESSING THE WAN (3 CR)

This course is the fourth of four courses that help prepare students for the Cisco CCNA certification exam. It covers the WAN concepts introduced in the CNS 101 in more depth. The goal is to develop an understanding of various WAN technologies to connect small to medium business networks. It focuses on WAN technologies including PPP, Frame Relay and broadband links.

Prerequisite: CNS 101

CNS 121 MICROSOFT® NETWORKING CLIENT I (3 CR)

This course will help students gain the knowledge and skills required to configure Windows® Vista® for optimal performance on the desktop. This course focuses on installing the client software, migrating from previous versions of the Microsoft® Windows® client, and configuring systems settings, security features, network connectivity, communications and media applications, and mobile devices.

CNS 122 MICROSOFT® NETWORKING CLIENT II (3 CR)

This course covers how Windows® Vista® is used in a medium to large enterprise. It focuses on the various technologies used to deploy and manage the operating system, including Windows® Image Manager, Windows PE, Group Policy, User Account Control and Encrypted File System.

Prerequisite: CNS 121

CNS 123 MICROSOFT® NETWORKING SERVER I (3 CR)

This course covers installing Windows® Server 2008, configuring remote access, Network Access Protection (NAP), network authentication, IPv4 and IPv6 addressing and Domain Name System (DNS) replication: capturing and deploying Microsoft® Window® Deployment Services images; creating virtual machines; and installing server core.

CNS 124 MICROSOFT® NETWORKING SERVER II (3 CR)

This course covers planning Windows® Server 2008 roles; maintain server security; planning data storage, network load balancing, and server backups; managing software deployment and versions; monitoring IPv6, server performance and capacity, and AD replication; scheduling server deployments; and designing a rollback contingency plan.

Prerequisite: CNS 123

CNS 125 MICROSOFT® DIRECTORY SERVICES (3 CR)

This course covers configuring, managing and supporting user and computer accounts, groups, Domain Name System zones and clients settings; group policy objects; the new Active Directory® Lightweight Directory Service and Active Directory Rights Management Service; backup and recovery; and communication security.

CNS 128 POWERSHELL SCRIPTING FOR NETWORK ADMINISTRATORS (3 CR)

Students will develop the knowledge and skills to utilize Microsoft® PowerShell® to automate common administrative tasks on a Microsoft network. This course assumes no prior programming skills.

Prerequisite: CNS 121 or CNS 123

CNS 131 LINUX ADMINISTRATION I (3 CR)

This course introduces Linux to experienced computer users and to those with a basic knowledge of computers. Students will install and configure a distribution of Linux. They will learn to use a command line shell and a GUI to manage the file system, create user and group accounts, and manage file permissions. This course will cover how to set up a Linux system on a TCP/IP network, bash shell concepts, printing and installing programs Linux.

CNS 132 LINUX ADMINISTRATION II (3 CR)

In this course, the student will learn how to implement, configure and troubleshoot Linux, particularly as a network server. The student will configure Linux to provide DNS, DHCP, as a firewall and basic routing functions. The student will set up and secure the Apache web service and set up Linux to provide e-mail service. They will also set up Linux to interoperate within a Microsoft® Active Directory environment.

Prerequisite: CNS 131

CNS 141 WIRELESS NETWORKING (3 CR)

This course introduces the basic concepts of wireless networking. Students will work with various types of equipment needed to set up and maintain local wireless networks of various sizes. Considerable emphasis will be placed on how to secure access to and the information that travels across wireless networks.

Prerequisite: CNS 101

CNS 201 NETWORK SECURITY/SECURITY+ (3 CR)

The student will be introduced to computer network vulnerabilities and threats and how to safeguard computer networks from those vulnerabilities and threats. This course will expose the student to network security planning, network security technology, network security organization and the legal and ethical issues associated with network security. In this course, students will learn the skills necessary for Security+ certification.

Prerequisite: CNS 102

CNS 211 SCALABLE CISCO NETWORKS (3 CR)

In this course, students will learn how to create an efficient and expandable enterprise network. Students will also learn how to install, configure, monitor, and troubleshoot network infrastructure equipment. Topics include configuration of EIGRP, OSPF, IS-IS, and BGP routing protocols, and how to manipulate and optimize routing updates between these protocols. Other topics include multicast routing, IPv6, and DHCP configuration.

Prerequisite: CNS 104

CNS 212 SECURE CONVERGED WANS (3 CR)

Students are introduced to secure enterprise-class network services for teleworkers and branch sites. Students will learn how to secure and expand the reach of an enterprise network with a focus on VPN configuration and securing network access. Topics include teleworker configuration and access, frame-mode MPLS, site-to-site IPSEC VPN, Cisco EZVPN, strategies used to mitigate network attacks, Cisco device hardening, and IOS firewall features.

Prerequisite: CNS 104

CNS 213 MULTILAYER SWITCH NETWORKS (3 CR)

This course covers the deployment of state-of-the-art campus LANs. The primary focus is on the selection and implementation of the appropriate Cisco IOS services to build reliable, scalable, multilayer-switched LANs. Focus areas of the course include VLANs, Spanning Tree Protocol, wireless client access, minimizing service loss, and minimizing data theft in a campus network.

Prerequisite: CNS 104

CNS 214 OPTIMIZING CONVERGED NETWORKS (3 CR)

Optimizing Converged Networks introduces students to effective QoS techniques for optimization in converged networks with voice, wireless, and security applications. Topics include implementing a VoIP network, specific mechanisms for implementing the DiffServ QoS model, AutoQoS, wireless security, and basic wireless management.

Prerequisite: CNS 104

CNS 221 SECURING MICROSOFT® NETWORKS (3 CR)

This course will cover how to protect your Windows®-based clients, server roles, networks, and Internet services. Students learn how to plan and implement comprehensive security with special emphasis on new Windows® security tools, security objects, security services, user authentication and access control, network security, application security, Windows® Firewall, Active Directory® security, group policy, auditing and patch management.

Prerequisite: CNS 125

CNS 231 FIREWALL INTRUSION DETECTION (3 CR)

This course will cover how to install, configure and manage network and host-based firewalls. It will cover how to set up and configure popular network-based firewalls and host-based firewalls with various operating systems. It will instruct the students how to set up both network- and host-based intrusion detection systems to determine if and when a network or system has been breached.

Prerequisite: CNS 201

CNS 232 COMPUTER FORENSICS I (3 CR)

This course deals with the preservation, identification, extraction, documentation and interpretation of computer data. Topics covered include evidence handling, chain of custody, collection, preservation, identification and recovery of computer data.

Prerequisite: CNS 201

CNS 233 HACKER TECHNIQUES AND INCIDENT HANDLING (3 CR)

Introduces common computer and network hacking techniques. With a sound understanding of how hackers can compromise computers and computer networks you will learn how to identify when an incident has happened, how to respond in a comprehensive manner, and what steps to take to protect yourself in the future.

Prerequisites: CNS 131 and CNS 201

CNS 234 ETHICAL HACKING (3 CR)

This course introduces the concept of ethical hacking and how to perform penetration tests of computer networks. In hands-on labs an emphasis will be placed on how to use tools to discover weaknesses in computer networks and how to improve the defenses of those networks against malicious attacks.

Prerequisite: CNS 201

CNS 235 PACKET ANALYSIS AND NETWORK FORENSICS (3 CR)

Students utilize common packet sniffing tools, intrusion detection tools and packet analysis tools to determine if malicious activity is occurring on a network. They learn details about how network protocols can be abused by hackers. They find how network connection logging provides a valuable source of evidence.

Prerequisite: CNS 231

Computer Science (CPS)

CPS 177 PROGRAMMING IN C++ (3 CR)
(SAME AS CIS 170)

Students study digital computing systems and how they are used to solve problems. Students use procedural and object-oriented programming capabilities to design, develop and test computer programs. Topics covered include program development, functions, control structures, text file operations, classes, recursion, arrays and pointers.

CPS 217 COMPUTER SCIENCE II (3 CR)

This course is a continuation of CPS 177. Students are introduced to major data structures used for data storage and processing. These include arrays, lists, stacks, queries and trees. Algorithms for searching, sorting and updating structures are developed and analyzed.

Prerequisite: CPS 177

Criminal Justice (CRJ)

CRJ 101 CRIMINAL LAW (3 CR)

This course covers both substantive and procedural law at local, state and federal levels. Special emphasis given to the Michigan Penal Code and landmark court decisions.

*Prerequisite: ENG 085**

CRJ 102 CRIMINAL INVESTIGATION (3 CR)

This course covers the fundamentals of criminal investigation, theory and practice, from crime scene to courtroom, with emphasis on techniques appropriate to specific crimes.

*Prerequisite: ENG 085**

CRJ 104 CRIMINAL JUSTICE PSYCHOLOGY (3 CR)

This course is an overview of criminal behavior from a psychological perspective. Contemporary research, theory and practice concerning the psychology of crime are reviewed.

*Prerequisite: ENG 085**

CRJ 108 CRIMINAL JUSTICE FIELDWORK-SECURITY (3 CR)

This course is an introduction to security internship at Jackson College. Course includes, but is not limited to, training in AED/CPR, chemical irritants, courtroom demeanor and testimony. Also includes a minimum of 14 hours per week of job training.

Prerequisite: Instructor Permission Required.

CRJ 109 ADVANCED SECURITY TRAINING (2 CR)

This course provides students with advanced security training as a safety security officer at Jackson College. Instructor permission is required for this course.

Prerequisite: CRJ 108 and Instructor Permission Required

CRJ 111 INTRODUCTION TO CRIMINAL JUSTICE (3 CR)

This course covers the history, evolution and philosophy of the American criminal justice system. Emphasis on the interrelationship of system components: police, attorneys, courts and corrections.

Prerequisites: ENG 085 and ENG 090**

CRJ 112 CRIME & DELINQUENCY (3 CR)

Introduction to deviant behavior and current criminological theories with emphasis on synthesis and police applications to juveniles; diversion and status offenses considered.

Prerequisites: ENG 085 and ENG 090**

CRJ 113 INTRODUCTION TO CRIMINALISTICS (3 CR)

Scientific methods applied to the collection, identification, preservation and transportation of physical evidence and taught in a laboratory setting.

*Prerequisite: ENG 085**

CRJ 114 POLICE ADMINISTRATION & OPERATIONS (3 CR)

Administration and operation of a police department including line/staff activities are explored.

Prerequisites: ENG 085 and ENG 090**

CRJ 116 FIRE INVESTIGATION I (3 CR)

Reviews arson and fire laws and their application. Investigative methods unique to the fire scene will also be covered. Particular value to criminal justice students and fire fighting personnel.

*Prerequisite: ENG 085**

CRJ 117 CRIMINOLOGY (3 CR) (SAME AS SOC 117)

Provides an understanding of the cultural nature, origin and development of criminal behavior with attention given to the psychological and sociological factors involved.

Prerequisites: ENG 085 and ENG 090**

CRJ 119 CLIENT GROWTH & DEVELOPMENT (3 CR)

A corrections-oriented course involving the study of normal versus criminal behavior, human development and criminal pattern. Also involves the study of specific problems including substance abuse, sexual and medical problems and disorders.

Prerequisites: ENG 085 and ENG 090**

CRJ 120 HUMAN RELATIONS FOR CORRECTIONS (3 CR)

A study of the meaning and function of culture and the social and psychological implications of discrimination. Also involves a survey of minorities in Michigan, attitude formation and professional responsiveness.

Prerequisites: ENG 085 and ENG 090**

CRJ 121 INTRODUCTION TO CORRECTIONS (3 CR)

A survey of the American corrections system as a component of the criminal justice system.

Prerequisites: ENG 085 and ENG 090**

CRJ 124 INSTITUTION POPULATIONS (3 CR)

The nature, composition and dynamics of the prison population as a separate society are central topics in this course.

Prerequisites: ENG 085 and ENG 090**

CRJ 125 PAROLE & PROBATION (3 CR)

Pre- and post-institutional treatment and alternatives are presented. Consideration also given to diversion and community-based correctional programs.

Prerequisites: ENG 085 and ENG 090**

CRJ 127 CORRECTIONS LAW (3 CR)

Deals with the law as it applies to the correctional system. Applicable court cases and legislation will be considered. Topics will include sentencing, prisoners' rights and responsibilities; loss of rights, prisoner remedies; community corrections and restoration of rights of offenders.

Prerequisites: ENG 085 and ENG 090**

CRJ 203 FIELD STUDIES (3 CR) (SAME AS SOC 203)

This course provides an opportunity for students to work for one semester in a law enforcement or corrections agency. Only open to students who have reached sophomore level (26 or more credit hours), minimum 2.5 GPA and permission of the instructor.

Culinary Arts (CUL)

CUL 100 INTRODUCTION TO HOSPITALITY (3 CR)

Students are exposed to the social, economic and environmental context within which the hospitality industry operates. Student will study the structure, nature and operating characteristics of the different sectors of the hospitality industry including food service, lodging and tourism. Students are also exposed to the various functions of management, their interrelationships with marketing, finance and human resource management. Students study the role of managers in the hospitality industry and highlight their principle responsibilities.

Prerequisites: ENG 085 and ENG 090**

CUL 111 FOOD HANDLING AND ALCOHOL SERVICE (3 CR)

Students study food safety risks encountered in the food service industry to ensure that food is safely served. Students learn about the microorganisms that cause foodborne illness and other contaminants that can make food hazardous. Concepts and skills are presented to reduce the risk of foodborne illness and prepare the student to pass the National Restaurant Association ServSafe Food Protection Manager Certification Examination. ServSafe Alcohol training will provide students the understanding of alcohol law and their responsibility, how to recognize and prevent intoxication, how to properly check identification, and handling difficult situations related to alcohol use. Concepts and skills learned will prepare the student to pass the national Restaurant Associate on ServSafe Alcohol Certification Examination.

*Prerequisite: ENG 085**

CUL 114 BAKING (3 CR)

Students are introduced to basic theory, practices and production techniques required to produce quality baked good items such as yeast raised breads, cookies, pies and cakes. Emphasis is placed on time management, safe food handling, storage and proper utilization of ingredients and equipment. Students are required to demonstrate managerial and organizational skills.

Prerequisites: CUL 111, ENG 085, ENG 090* and MAT 020* or higher*

CUL 115 BAKING & PASTRY (3 CR)

In this course students will produce classic and modern cakes, cookies, custards, chocolates, candies, hot and frozen desserts, classical plated desserts and centerpieces using several different mediums. Emphasis is on organization, sanitation, speed and presentation.

Prerequisites: CUL 114, ENG 085 and MAT 020* or higher*

CUL 118 NUTRITION FOR FOOD SERVICE AND CULINARY (3 CR)

This course studies nutrients including functions, food sources, digestion, absorption and metabolism with application to normal and preventive nutrition needs, including nutrient intake analysis, energy expenditure evaluation and diet planning. Students recall and classify nutrient categories, their functions, digestion, absorption and metabolism; recommendations and nutrient categories; conduct personalized computerized nutrient analysis and calculate personalized energy needs; and plan a personalized diet according to the principles of the Exchange List System and the USDA Food Pyramid.

Prerequisites: CUL 100, CUL 111, ENG 085 and MAT 020* or higher*

CUL 120 CULINARY SKILLS (3 CR)

Students are introduced to the principles of quantity food production, fabricating techniques, recipe conversions, costing, product identification and classical culinary skills. Students learn to operate and care for equipment, along with maintaining a safe and sanitary environment.

Prerequisites: CUL 111, ENG 085, ENG 090* and MAT 020* or higher*

CUL 121 INTRODUCTION TO FOOD PRODUCTION TECHNIQUES (3 CR)

This course will serve as an introduction to the basic concepts, techniques, terminology and methods involved in the preparation, presentation and portioning of various food and menu items. Students will rotate through the stations of a commercial kitchen gaining experience in knife skills, food production, food preparation, recipe understanding and the overall operation of a restaurant kitchen. This course will focus on à la carte, cooked to order foods as well as some quantity food production. Emphasis will be placed on the cookery process, food desserts, vegetables, salads, starches and entree preparations and also developing the proper techniques of plating and preparing desserts, vegetables, salads, starches and entree preparations.

Prerequisites: CUL 111, CUL 120, ENG 085 and MAT 020* or higher*

CUL 150 FOOD SERVICE MANAGEMENT (3 CR)

Students are introduced to trends, organization and operations within the hospitality industry including tourism, lodging, restaurant, recreation and leisure, gaming, managed services, meeting/convention/exhibition, cruise, spa and resort segments.

Prerequisites: ENG 085, ENG 090* and MAT 020* or higher*

CUL 175 INTERNATIONAL CUISINE (3 CR)

The development of world cuisine is a direct result of topography, location, climate and cultural influence. This hands-on course offers the student practical exposure and historical insight to the varied world cuisines of Europe, Asia and the Mediterranean, working from the roots of these civilizations to present day. As the particular aspects of regional ingredients and traditional cooking techniques are discovered, a rich source of inspiration is cultivated in future culinary professionals.

Prerequisites: CUL 121, ENG 085, ENG 090* and MAT 020* or higher*

CUL 210 GARDE MANGER (3 CR)

Students study garde manger, both as a style of cuisine and as a tool to enhance the efficiency and value of cookery. Emphasizing techniques of cooking over specific recipes, it covers a broad range of dishes from cold sauces to plated appetizers to hors d'oeuvres. Focus on creativity, the principles of plate presentation, buffet design, food art and sculpted centerpieces. Designed for the contemporary kitchen, it prepares students for a variety of situations, from à la carte menus to theme-based events, buffets and brunches.

Prerequisites: CUL 121, ENG 085, ENG 090* and MAT 020* or higher*

CUL 224 FOOD AND BEVERAGE COST CONTROL (3 CR)

Students are introduced to concepts of food, beverage and labor cost control systems in preparation for careers in the food, beverage and hospitality industry. Students analyze costs related to food and beverage, labor and supplies used in the industry as well as exercises that are related to purchasing and receiving.

Prerequisites: ENG 085 and MAT 020* or higher*

CUL 227 CONTEMPORARY CUISINE (3 CR)

This course emphasizes supervision and management concepts, knowledge and skills of contemporary cuisine including menu selection, layout and design, on/off premise catering, entrepreneurship, small business management and nutrition. Laboratory demonstrations and student experimentation parallel class work.

Prerequisites: CUL 121, ENG 085, ENG 090* and MAT 020* or higher*

CUL 228 FOOD SERVICE LAYOUT AND DESIGN (3 CR)

Students are introduced to the design and layout of food service facilities. Course covers preliminary planning, the roles and responsibilities of members of the project team, the design sequence, principles of design, space analysis, equipment layout, fabricated and manufactured equipment and engineering and architecture for food service facilities.

Prerequisites: CUL 120, CUL 150, ENG 085, ENG 090* and MAT 020* or higher*

CUL 230 QUANTITY FOOD PRODUCTION (3 CR)

Students advance their culinary skills, creativity in food presentation, time management, planning and composing catering functions, as well as participation in post secondary skill competitions. Emphasis will be placed on innovative and practical thinking to cope with last minute and short notice events. At the end of this course a student could acquire the skills and knowledge to enter a culinary ACF approved food show and take an active role in Skills USA competitions.

Prerequisites: CUL 121, ENG 085, ENG 090* and MAT 020* or higher*

CUL 231 À LA CARTE KITCHEN (3 CR)

The focus is on modern, contemporary and classical cuisine for service in restaurants. Correct applications and fundamentals of culinary skills, quantity food production and organization, mise en place, cooking methods, improved knife skills, plate presentation and the use of standardized recipes will be stressed. Students prepare à la carte salads, dressings, marinades, vegetables, starches and entrees. Students hone their skills to be both creative in preparation and food presentation approaches.

Prerequisites: CUL 121, ENG 085, ENG 090* and MAT 020* or higher*

CUL 250 PRINCIPLES OF BEVERAGE SERVICE (3 CR)

This course focuses on the study of the beverage service in the hospitality industry which includes spirits, wines, beers and non-alcoholic beverages. Topics include purchasing, resource control, legislation, marketing, physical plant requirements, staffing, service and the selection of wines to enhance foods. Students complete the ServSafe Alcohol training and national examination. Must have Culinary Arts and Hospitality Management associate degree (CUR. AAS) as active program of study to enroll.

Prerequisites: CUL 111, ENG 085, ENG 090* and MAT 020* or higher*

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Dance (DAN)

DAN 121 JAZZ TECHNIQUES (3 CR)

(SAME AS HPF 221)

Beginner to intermediate level class exploring contemporary jazz and modern dance techniques. Includes an introduction to the fundamentals of choreography, exploration of the elements of dance, and history of dance.

DAN 122 JAZZ TECHNIQUES II (3 CR)

An advanced approach to jazz dance with emphasis upon combining jazz pieces into complete choreographies.

Prerequisite: DAN 121 or HPF 221

Diagnostic Medical Sonography (DMS)

DMS 100 INTRODUCTION TO DIAGNOSTIC IMAGING (3 CR)

Students are introduced to the radiologic sciences. Modalities discussed include x-rays, nuclear medicine, ultrasound, computerized tomography (CT), magnetic resonance imaging (MRI) and photon emission tomography (PET). Students learn indications for a variety of diagnostic studies, how they are evaluated and interpreted, correlations of multiple studies, and how to prepare the patient for the study.

DMS 101 SONOGRAPHIC ORIENTATION (3 CR)

This course prepares sonography students for their clinical work-site experiences. Students will explore interpersonal relationship skills, ethical decision making, and a review of clinical technical skills as they relate to the on-site work experience. Students will learn basic cross-sectional anatomy as related to beginning sonographic scanning of the abdomen.

Prerequisite: Acceptance into DMS program

DMS 104 INTRODUCTION TO SONOGRAPHIC INSTRUMENTATION (3 CR)

In this course students will learn the history and basic principles of static and real-time ultrasound machines. The instrumentation of A-mode and its conversion into the real time B-mode scanners will be explored. Laboratory assignments reinforce learning activities.

Prerequisites: ENG 085 and MAT 131* or higher, plus signed DMS fact sheet (EQV-DMSFS)*

DMS 105 SONOGRAPHIC TECHNIQUES (3 CR)

This course instructs the DMS student in scan planes, anatomical positioning, scan protocols, scan preparations, scan scheduling, appropriate history recording, correlations with other diagnostic procedures, and the techniques required for initiating and completing diagnostic sonographic procedures of the abdominal, obstetrical and gynecological patients.

Prerequisites: DMS 101 and DMS 104

DMS 107 SONOGRAPHIC ORIENTATION -- VASCULAR (3 CR)

This course prepares sonography students for their clinical work-site experiences. Students will explore interpersonal relationship skills, ethical decision making, and a review of clinical technical skills as they relate to the on-site work experience. Students will learn basic cross-sectional anatomy as related to beginning sonographic scanning of the arterial and venous systems, of the extremities, neck and abdomen.

DMS 108 ESSENTIALS OF SONOGRAPHY (3 CR)

This course will address the high priorities in the health care field such as good character, strong work ethic and professional traits and behaviors that apply to all health care workers. Affective domain, as well as the ability to process and understand physical relationships among objects, will be assessed through scanning exercises.

DMS 122 CLINICAL EXPERIENCE I (6 CR)

In this course, students receive supervised clinical work experience in an approved clinical education center. This course provides basic scanning opportunities, patient interviewing techniques, professional attitudes and ethics, and other basic patient/professional situations under the direct supervision of a registered diagnostic medical sonographer (RDMS). Completions of professional and technical scanning proficiencies are required. A minimum of 515 hours are required to complete this course.

Prerequisite: DMS 101

DMS 140 SONOGRAPHIC ORIENTATION & TECHNIQUE (3 CR)

In this course students learn the principles of application of ultrasound as it pertains to echocardiographic exam. Topics of study include: windows and views, anatomy and physiology of the heart and great vessels, Doppler techniques, nomenclature of cardiac structures per ASE guidelines, LV assessment and function, as well as clinical indications for the echo. These studies are for preparation of applying correct techniques in the acquisition of sonographic cardiac images.

DMS 141 ADULT ECHO I (4 CR)

In this course students learn fundamentals of cardiac pressures, cardiac cycle, and the cardiac conduction system. Studies include: cardiac valves – normal and abnormal conditions, flow abnormalities, and physiological complications from these conditions. These studies are for preparation of applying correct techniques in the acquisition of sonographic cardiac images.

DMS 142 ECHO CLINICAL I (2 CR)

In this course students receive 168 hours of supervised clinical experience in an approved clinical education center. This course provides hands-on experience in basic cardiac imaging, patient care, and application of knowledge and skills acquired in DMS 140 and DMS 141. Successful completion of professional and technical scanning proficiencies is required to remain in the program. This course is the first in a series of three clinical courses that prepare the student for the final objective of performing and evaluating the adult echocardiogram.

DMS 144 CARDIOVASCULAR PRINCIPLES (3 CR)

This course is a study of cardiac anatomy and physiology, cardiac hemodynamics, principles of Doppler, and ECG interpretation. Problem solving, evaluation, and echo interpretation will be emphasized in this course. This course contains materials and instruction that will prepare the student in meeting the program's final objective of independent performance and evaluation of the complete adult echocardiogram.

Prerequisites: DMS 140 and DMS 141

DMS 148 ECHO CLINICAL II (7 CR)

In this course students receive 512 hours of supervised clinical experience in an approved clinical education center. This course provides hands-on experience in intermediate level cardiac imaging and use of cardiovascular equations. Successful completion of scanning proficiencies is required to remain in the program. This course is the second in a series of three clinical courses that has the final objective of independent performance and evaluation of the adult echocardiogram.

DMS 151 PERIPHERAL ARTERIAL I (3 CR)

This course facilitates student learning of diagnostic testing methods for the peripheral arterial systems of the upper and lower extremities. Testing methods covered will include segmental pressures, color Doppler imaging (CDI) and duplex sonography.

Prerequisite: BIO 132 or BIO 253

DMS 152 PERIPHERAL ARTERIAL II (3 CR)

This course, a continuation of DMS 151, facilitates student learning of diagnostic testing methods for the peripheral arterial systems of the upper and lower extremities. Testing methods covered will include segmental pressures, color Doppler imaging (CDI) and duplex sonography. Abdominal vascular testing techniques will be included.

Prerequisite: DMS 151

DMS 155 PERIPHERAL VENOUS (3 CR)

This course facilitates student learning of diagnostic testing methods for the peripheral venous systems of the upper and lower extremities. Venous hemodynamics and testing methods covered include all areas of color Doppler imaging (CDI), air and photo plethysmography.

Prerequisite: BIO 132 or BIO 253

DMS 161 VASCULAR CLINICAL I (4 CR)

In this course students receive 300-plus hours of supervised clinical experience in an approved vascular laboratory. This course provides hands-on experiences in basic color Doppler imaging (CDI), hemodynamics, segmental pressures and duplex sonography. Students are instructed and supervised by registered vascular technologists. Completion of clinical competencies is required to complete this course.

DMS 196 INTRODUCTION TO CARDIAC CLINICAL (5 CR)

This course prepares cardiac sonography students for their clinical externship. Students will study and practice the technical as well as personal skills as they relate and are required for the on-site work experience. Students will demonstrate sonographic scanning of their discipline with the expected outcome of a basic level competency. Admission to the cardiac sonography program required to register for this course.

DMS 197 INTRODUCTION TO CLINICAL (5 CR)

This course will allow students to gain basic knowledge and practical skills that are necessary to begin a clinical externship in sonography. Students will study and practice: 1) communication skills as they are applied to the student-to patient/sonographer/physician relationship, 2) patient assessment, and 3) scanning techniques that will be a part of their daily routine in their clinical practice. Admission to the sonography program required to register for this course.

DMS 198 INTRODUCTION TO VASCULAR CLINICAL (5 CR)

This course prepares sonography students for their clinical work-site experiences. Students will review clinical technical skills as they relate to the on-site work experience. Students will learn sonographic scanning of their program discipline with the outcome of a basic level competency. Admission to the vascular sonography program required to register for this course.

DMS 200 ABDOMEN AND SMALL PARTS SONOGRAPHY (4 CR)

In this course students learn in-depth, cross-sectional anatomy and pathology as related to sonographic scanning of the abdomen and small parts in the adult and pediatric patient. The class gives attention to physiologic and pathological changes of specific, non-specific diseases, and trauma as they relate to sonographic interpretation of the abdomen and small parts. Mastery level achievement is encouraged and expected.

DMS 201 OBSTETRIC AND GYNECOLOGIC SONOGRAPHY (4 CR)

Students learn in-depth, cross-sectional anatomy and pathology as related to sonographic scanning of the pelvis in the adult and pediatric patient, and the gravid uterus. The class gives attention to physiologic and pathological changes of specific, non-specific diseases, and trauma as they relate to sonographic interpretation of the pelvis and gravid uterus. Mastery level achievement is encouraged and expected.

DMS 206 SONOGRAPHIC INSTRUMENTATION (4 CR)

Students explore the mechanics of A-mode, B-mode, M-mode, Doppler, and real time equipment. Accessory equipment such as cameras, transducers, phased, annular and linear arrays, and all types of hard copy documentation instruments are investigated. Multiple methods of preventative maintenance and quality control are presented. Laboratory reinforces learning activities.

DMS 212 COMPREHENSIVE SONOGRAPHY (4 CR)

This course includes advanced scanning practices with introduction to cardiac, peripheral vascular, neurosonography, breast, prostate, and musculoskeletal scanning. Invasive procedures and intra-operative scanning protocols and techniques will be enhanced upon. Opportunity and aid is given for ARDMS board applications. Extensive review of all facets of sonography is included in preparation for the ARDMS board exams.

DMS 223 CLINICAL EXPERIENCE II (6 CR)

This course includes supervised clinical experience in an approved clinical education center, advanced scanning techniques to demonstrate cross-sectional anatomy and pathology of specific and non-specific disease and traumatic changes. Specific attention is given to fetal development, fetal anomalies, abnormal prenatal and maternal conditions as they relate to sonographic scanning and interpreting of images. Although the student is still under the supervision of a RDMS professional, the student is expected to perform sonographic procedures independently as a regular portion of this course. The completion of professional and technical scanning proficiencies is required. A minimum of 515 clinical hours are required for successful completion of this course.

Prerequisites: DMS 122 and DMS 200

DMS 224 CLINICAL EXPERIENCE III (6 CR)

This course includes supervised clinical experience in an approved clinical education center. Advanced scanning procedures, methods and experience are provided in this course. Students experience advanced scanning modalities via M-mode, Doppler, 3D, real-time and invasive procedures. Comparative interpretations of sonographic imaging with other diagnostic imaging modalities are provided. Students are expected to initiate, perform, and complete all sonographic procedures with direct supervision by a RDMS. The successful completion of professional and technical scanning proficiencies is required. A minimum of 320 clinical hours are required to successfully complete this course.

Prerequisites: DMS 201 and DMS 223

DMS 240 ADULT ECHO II (4 CR)

In this course students will focus on the abnormal heart. Valvular disease, coronary artery disease, diseases of the myocardium, cardiac masses and tumors, pericardial disease and diseases of the aorta are some of the topics to be covered. Students will also learn the various appearances of congenital heart disease in the adult heart. This advanced course contains materials and instruction that will assist the student in meeting the final objective of independent performance and evaluation of the complete adult echocardiogram.

Prerequisites: DMS 140, DMS 141 and DMS 144

DMS 244 ECHO CLINICAL II (6 CR)

In this course students receive 464 hours of supervised clinical experience in an echo lab at an approved medical facility. This course provides hands-on experience at an advanced level of cardiac imaging and use of cardiovascular equations. Interpretation skills will apply. Successful completion of scanning proficiencies is required to graduate from the program. This clinical course is the final course in a sequence of three, and the final objective to be met is successful, independent performance and evaluation of the complete adult echocardiogram.

Prerequisites: DMS 142 and DMS 148

DMS 251 CEREBROVASCULAR IMAGING (3 CR)

This course facilitates student learning of diagnostic testing methods and hemodynamics of the extracranial vessels of the head and neck. Testing methods covered include color Doppler imaging (CDI) and duplex sonography.

Prerequisite: BIO 132 or BIO 253

DMS 254 TRANSCRANIAL DOPPLER IMAGING AND CAPSTONE (3 CR)

This course will facilitate student learning of diagnostic testing methods and hemodynamics of the intracranial vessels. Testing methods covered will include: color Doppler imaging (CDI and duplex sonography). In this course a strong emphasis is placed on registry preparation and job placement. Topics include: testing tips and techniques (during weekly class sessions students will individually and on a team basis complete a 200 question mock registry using testing tips and techniques), and the process of developing a résumé and cover letter.

Prerequisite: DMS 251

DMS 265 VASCULAR CLINICAL II (4 CR)

This course is a continuation of DMS 161. Students receive 300 plus hours of supervised clinical experience in an approved vascular laboratory. It also provides hands-on experiences in basic and advanced color Doppler imaging (CDI), hemodynamics, segmental pressures and duplex sonography. Students are instructed and supervised by registered vascular technologists. Completion of clinical competencies required to complete this course.

DMS 266 VASCULAR CLINICAL III (4 CR)

This course is a continuation of DMS 265. Students receive 300 hours of supervised clinical experience in an approved vascular laboratory. It also provides hands-on experiences in advanced color Doppler imaging (CDI), hemodynamics, segmental pressures and duplex sonography. Students are instructed and supervised by registered vascular technologists. Completion of clinical competencies is required to complete this course.

eCommerce (ECM)

ECM 101 ECOMMERCE FUNDAMENTALS (3 CR)

The course introduces revenue models for conducting business transactions globally with customers over the Internet. Topics include integrating eBusiness strategies with traditional store-front objectives, procuring hardware and software resources, optimizing web marketing opportunities, and complying with legal, ethical and regulatory restrictions. Student will apply concepts to real-life scenarios through active-learning strategies.

Prerequisites: CIS 095, ENG 085*, ENG 090* and MAT 020* or higher*

ECM 201 ADVANCED INFORMATION TECHNOLOGIES (3 CR) (SAME AS CIS 201)

This course enhances electronic communication skills and computer concepts essential to using current advanced information technologies. Topics include web collaboration, web conferencing, web 2.0 applications, social media, mobile computing, file conversions and cross-platform compatibility.

Prerequisites: CIS 101, ENG 085*, ENG 090**

ECM 220 EBUSINESS: SEO/MANAGEMENT (3 CR)

This course covers search engine optimization, analyzing web marketing efficiencies and evaluating content management systems. Topics include competitive comparison, keyword analysis, effective link building, blogs and eCommunities setup. Specific eBusiness components, such as Google Analytics, social networking sites and pay-per-click advertising campaigns are emphasized to increase the efficiency of eCommerce site operations.

*Prerequisite: CIS 095**

Economics (ECN)

ECN 231 MACROECONOMICS (3 CR)

This course covers macroeconomics and explains the operation of free markets, the role of government in the economy, measurement of the national product, inflation and unemployment, monetary and fiscal policy, and economic growth.

Prerequisites: ENG 085 and MAT 020* or higher*

ECN 232 MICROECONOMICS (3 CR)

This course covers microeconomics: the market structure of firms operating in competition and monopoly, labor markets and unions, how income is distributed, current economic problems, international economics, and alternative economic systems.

Prerequisites: ENG 085 and MAT 020* or higher*

Education (EDU)

EDU 100 PRE-TEACHING PATHWAY (3 CR)

A career track introduction to the teaching profession designed for students with basic skill levels in reading, writing and math/science. Experiences in the course will include an introduction to: professional portfolio, teaching professionalism and technology. Students will begin the professional career path with grades pre-K to 12 field experiences and professional pathway planning, as well as investigating opportunities in the field of teacher education.

*Prerequisite: ENG 085**

EDU 221 EXPLORING TEACHING (3 CR)

"What are the things prospective teachers beginning their formal study of teacher education should know?" Students will gain knowledge of the role of a professional teacher and education topics: schools, diverse students and their needs, historical and current education issues and trends, as well as philosophical and legal foundations in American education. Students will explore and experience key concepts and skills through reading, research, presentation of a lesson, development of a professional portfolio and a teaching philosophy, documented technology and education site-based field experiences. Minimum of 16 hours field experience is included.

Prerequisites: ENG 131

EDU 232 THE EXCEPTIONAL CHILD (3 CR)

This survey course introduces the learner to exceptional children from pre-kindergarten through adolescence. Characteristics, educational considerations and implications for educators and parents are a sample of the topics addressed. Developmental factors and the role of families in education and intervention, appropriate practices, culturally competent professional behavior, and collaborative interpersonal and inter-professional actions are included. The course includes historical and organizational factors, laws, and implications of all areas of exceptionality that govern special education. A minimum of five hours of approved literacy field service is required.

Prerequisites: ENG 085 and ENG 131*

EDU 263 CHILD GROWTH & DEVELOPMENT (3CR)

This course surveys learning development from prenatal stages through adolescence. Students study normal and exceptional development of the physical, cognitive, emotional and social domains of children in the contexts of home, school and group settings. Students study developmental theories and best practice methods. A minimum of 20 hours of approved field service including a group diversity project is required.

Prerequisite: ENG 131

EDU 290 INSTRUCTIONAL SKILLS WORKSHOP (2 CR)

Instructional skills workshop course brings together best practices in education and a proven process that fosters personal growth and reflections about the teaching/learning process. The course includes: best practices in teaching/learning, lesson development and delivery, lesson assessment skills, and feedback skills. In addition, best practices in teaching techniques are explored and include: cooperative learning, multiple intelligences, assessment techniques, curriculum alignment, etc. This course is intended for anyone interested or employed in the teaching profession.

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Energy Systems (EGY)

EGY 101 ENERGY INDUSTRY FUNDAMENTALS (3 CR)

Energy Industry Fundamentals provides a broad understanding of the electric and natural gas utility industry and the generation, transmission, and distribution infrastructure, commonly called the "largest machine in the world," which forms the backbone for the industry. The course includes business models, regulations, types of energy and their conversion to useable energy such as electric power, emergent technologies, and the connection to careers in the energy industry. An ANSI accredited EIF Certificate will be awarded upon successful completion of final certification exam.

Prerequisites: MAT 020 and ENG 085**

EGY 345 ENERGY SYSTEMS INTERNSHIP (3 CR)

This course offers meaningful industry experience within the energy systems arena. The internship demands intentional reflection on the part of student based upon feedback from their industry supervisor. A specific internship site, industry supervisor and learning outcomes must be jointly agreed upon between the student, the faculty member and the site supervisor. A portfolio of the internship will be created and submitted to the faculty member. Student may only take twice for credit.

Prerequisite: Instructor Permission Required

EGY 361 INDUSTRY MATERIALS ANALYSIS (3 CR)

This course provides students with the necessary concepts, terminology and principles to interact effectively with engineers and engineered materials in a power plant or other energy industry environment. Topics include stress/strain, tensile strength, yield strength, fatigue, dynamic loading, and basic finite element analysis (FEA). In addition, students will explore additional principles of power engineering and roles within the energy industry. The term project will cover the complete design and specification process for engineered materials.

Prerequisites: EGY 101, MFG 105, CAD 151, and PHY 231 or PHY 251

EGY 380 POWER GRID/SMART GRID (3 CR)

The electric power grid has quietly supported our industrialized society for over a century, but a changing world poses major challenges. Today, new technology is transforming the energy industry as smart grid solutions and renewable energies enter the market. Industry professionals need to understand the evolution of the present system, the technology and challenges that have emerged in recent years, and additional changes that are on the horizon. Topics include: advanced metering systems, powerline communications, integration of renewables, cybersecurity, microgrids and more.

Prerequisites: EGY 101, ALT 200, and PHY 231 or PHY 251

EGY 499 SENIOR SEMINAR (3 CR)

This course is the capstone experience for the Bachelor of Science in Energy Systems Management. The course centers around an energy-related capstone project, which may be community-based, industry-based, or student created. Students will draw upon their previous coursework, synthesize skills, knowledge, and experience, and demonstrate their potential to make a positive difference in the industry or community.

Prerequisites: STM 401, COM 350, and Senior Standing in Program

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Electronic Technology (ELT)

ELT 105 INTRODUCTION TO ELECTRICAL SYSTEMS (3 CR)

This course provides non-electricians an introduction to principles of electricity, circuits, electrical devices and electrical safety. Students gain hands-on experience wiring circuits, using test equipment, and troubleshooting electrical equipment problems. The course gives students the tools necessary to work safely with and around electricity in an industrial environment that may include special machines, facility (process) support equipment, energy production equipment, and energy distribution systems.

Prerequisites: ENG 085, ENG 090* and MAT 020* or higher*

ELT 120 CIRCUIT ANALYSIS I (4 CR)

Students examine the fundamental concepts of DC circuits including electricity and magnetism, resistance, capacitance, inductance, series and parallel circuits, power and basic electrical measurements.

Prerequisites: ENG 085, ENG 090* and MAT 020* or higher*

ELT 126 CIRCUIT ANALYSIS II (4 CR)

A study of alternating electrical current is presented. Topics include AC measurements, resistance, inductance and capacitance in AC circuits.

Prerequisite: ELT 120

ELT 130 ELECTRONICS I (4 CR)

Study of electronic devices including diodes, bipolar and field effect transistors, integrated circuits, and other semiconductor devices; their parameters, nomenclature, characteristics, and application to practical circuitry.

Prerequisite: ELT 126

ELT 140 INTRODUCTION TO DIGITAL ELECTRONICS (4 CR)

This course is the beginning course in digital electronics. Topics include number systems, Boolean algebra, and basic logic gates and circuits.

Prerequisites: ENG 085 and MAT 020 or higher*

ELT 150 RESIDENTIAL WIRING (2 CR)

Topics covered in this course include blueprint reading, NEC code, branch circuit design, service entrance and switch control. Students are required to practice wiring and design skills with hands-on experiences.

ELT 151 COMMERCIAL WIRING (2 CR)

Topics covered in this course include wiring plans of commercial buildings, three phase 208/120 volt services, lighting fixtures, service entrances and metering facilities. The students will be given opportunities to practice skills in the wiring laboratory.

Prerequisite: ELT 105 or 150

ELT 152 INDUSTRIAL WIRING (2 CR)

Topics covered in this course include, substation and high voltage metering, feed duct, panel boards, motors and controllers, signal systems, ventilation and others. Students will be given opportunities to practice skills in the electrical wiring laboratory.

Prerequisite: ELT 150

ELT 160 PRINCIPLES OF ALTERNATIVE ENERGY (3 CR)

(SAME AS ALT 200)

This course will introduce students to alternative energy systems and their design and applications. The course will focus primarily on wind turbines, solar systems, and hydrogen fuel cells. A basic understanding of electricity is highly recommended.

Prerequisites: ENG 085 and MAT 020* or higher*

ELT 163 WIND ENERGY (3 CR)

(SAME AS ALT 250)

In this course students are exposed to many of the skills necessary to install a residential wind turbine system. Topics include siting wind turbines, turbine components, estimating turbine electricity output, loading, battery, inverters and off-grid/grid-connected systems. Labs include hands-on activities with turbines and electrical equipment. Prior electrical skills and knowledge are required to be successful in this course.

Prerequisites: ELT 126 and ELT 151

ELT 166 SOLAR ENERGY (3 CR)

(SAME AS ALT 255)

This course explores the design, installation and maintenance of photovoltaic (PV) systems. Topics include site survey and assessment, estimating solar array electricity output, inverters, battery systems and off-grid/grid-connected systems. Labs include hands-on activities with solar panels and electrical equipment. Prior electrical skills and knowledge are required to be successful in this course.

Prerequisites: ELT 120 and ELT 151

ELT 215 ELECTRICAL TROUBLESHOOTING (2 CR)

This course explores troubleshooting in various areas such as: control circuits, combination starters, control devices, special controls, DC motors, AC motors, lighting systems with use of schematics, building drawings, and with emphasis on cutting trouble-shooting time.

Prerequisites: ELT 126 and ELT 152

ELT 220 INDUSTRIAL MOTION CONTROL (3 CR)

This course covers motion controls as used in real world situations, including PLC, robotics, servos, sensing devices, actuators and controls.

Prerequisite: ELT 105 or ELT 126

ELT 250 ELECTRIC MOTORS & CONTROLS (4 CR)

Basic principles involved in the operation of motors and controls. Study includes single-phase motors and their operating principles, polyphase systems and the various control devices used with these systems.

Prerequisite: ELT 126

ELT 260 BASIC PROGRAMMABLE CONTROLLERS (4 CR)

Basic programmable controllers is a course for apprentices and skilled trades trainees looking at the history, characteristics, application and limitation of PCs. Numeration systems, binary-coded decimals, ASCII, gray code and Boolean logic studied. Additional study includes input/output devices, processing and programming functions, program development, documentation, start-up and troubleshooting.

Prerequisite: ELT 126

ELT 261 ADVANCED PLC PROGRAMMING (2 CR)

This course introduces topics that include advanced PLC programming, troubleshooting and data communications.

Prerequisite: ELT 260

ELT 274 ELECTRICIAN'S NATIONAL CODE (3 CR)

This course is an extensive study of the national and local electric codes for wiring and apparatuses. It covers wiring design and protection, wiring methods and materials, equipment for general use including motors and controllers, special occupancies such as hazardous location; special equipment such as electric welding and machine tool wiring, and the use of tables and diagrams for the solution of practical wiring problems.

Prerequisite: ELT 150

Emergency Medical Services (EMS)

EMS 110 ADVANCED FIRST AID & AMERICAN HEART CPR (2 CR)

This course provides instruction in adult, child and infant cardiopulmonary resuscitation, as well as advanced first aid. It is designed to prepare an individual to handle medical or accidental emergencies until professional help arrives or until the victim can seek help, and to handle minor injuries that do not require professional assistance. Upon successful completion of this course, the student is qualified to receive CPR and Advanced First Aid certificates through the American Heart Association (AHA) and American Academy of Orthopedic Surgeons (AAOS).

EMS 113 MEDICAL FIRST RESPONDER (5 CR)

The medical first responder course (MFR) is a minimum 64-hour lecture, lab and practical based emergency medical education program in a wide variety of medical and trauma settings. This level of education is the first level of licensure that the State of Michigan recognizes for a professional emergency healthcare provider. The scope of practice is typically utilized by rural fire departments, police and security agencies, industrial plant workers, lifeguards, search and rescue teams, along with private and public school personnel.

Prerequisite: Instructor Permission Required

EMS 114 EMS MEDICAL TERMINOLOGY/ANATOMY & PHYSIOLOGY (3 CR)

This course provides demonstration and foundation development for medical terminology, anatomy and physiology for students pursuing an EMS education. The structure of this course will be a lecture/lab format focused on anatomy and physiology of the human body combined with word building, definitions, spelling, usage and pronunciation of medical terminology utilized specifically for the entry level EMS student.

Prerequisite: Instructor Permission Required

EMS 122 EMT BASIC TECHNOLOGY (12 CR)

The basic emergency medical technician course is a Michigan Department of Community Health approved course. This program provides the information and experience necessary to prepare the student to sit for the National Registry Basic EMT Certification exam. Topics include: legal responsibilities, anatomy, physiology, patient assessment, management of various emergency situations, extrication, and current standards for EMTs in the field. Students will also participate in scenario-based education and computer-based testing and scenarios to reinforce skills learned within these areas. Students must complete a minimum of four 12-hour experiences in the hospital emergency room setting and with a pre-hospital life support agency. Laboratory and clinical experiences are included.

Prerequisites: ENG 085 and MAT 020**

Corequisites: EMS 1220 (Lab) and EMS 1221 (Clinical)

EMS 150 EMT INTERMEDIATE TECHNOLOGY (I-85) (8 CR)

The intermediate emergency medical technician (EMT-I) is a classroom and field-based emergency medical education program that prepares students to take the National Registry Intermediate EMT Certification exam. Students learn the role and responsibilities of an emergency medical technician at an intermediate level in providing emergency care. Content areas are covered in lectures, practical skills practiced in a laboratory setting along with observations and experience that will be gained in a clinical and/or internship setting.

Prerequisite: Instructor Permission Required

EMS 160 PARAMEDIC ADVANCED PRACTICE: I (4.25 CR)
(Formerly EMS 215 WITH EMS 161, EMT 162, EMT 163 and EMS 166)

This course is designed to prepare the student for licensure as an Advanced Emergency Medical Technician (Paramedic) in the State of Michigan. This course includes patient assessment techniques and concepts, advanced airway management, fluid and shock resuscitation, acid/base and body buffer systems, and multi-systems trauma treatments. Included in this course is a module on medical terminology. The course involves medical procedures and use of equipment as prescribed by the U.S. Department of Transportation, Michigan Department of Community Health, and Jackson County Medical Control Authority.

Prerequisite: Instructor Permission Required

Corequisites: EMS 161, EMS 162, EMS 163, EMS 164 and EMS 166.

** You may meet this prerequisite based on your course placement, ACT score or successful college coursework. Visit www.jccmi.edu for current assessment options and requirements.*

EMS 161 PARAMEDIC SKILL LAB: I (2 CR)

(Formerly EMS 215 with EMS 160, EMT 162, EMT 163 and EMS 166)

This course is designed to provide the paramedic student with the skills as prescribed by the Michigan Department of Community Health (MDCH) for the paramedic curriculum. This course includes skill practice and scenarios (both computer and classroom).

Prerequisite: Instructor Permission Required

Corequisites: EMS 160, EMS 162, EMS 163, EMS 164 and EMS 166.

EMS 162 PARAMEDIC PHARMACOLOGY: I (2.25 CR)

(Formerly EMS 215 with EMS 160, EMT 161, EMT 163 and EMS 166)

This course is designed to provide the paramedic students with a knowledge of basic pharmacological principles, biological factors influencing drug actions, predictable effects of drugs on physiologic problems, modifiers of predictable effects, commonalities and variations between the actions of drugs employed for comparable therapeutic effect, adverse effects of drugs that can and do commonly occur, and application for pharmacological therapy in the pre-hospital setting. Concentration will focus on cardiovascular drugs in this semester.

Prerequisite: Instructor Permission Required

Corequisites: EMS 160, EMS 161, EMS 163, EMS 164 and EMS 166.

EMS 163 PARAMEDIC CARDIOLOGY: I (2.25 CR)

(Formerly EMS 215 with EMS 160, EMT 161, EMT 162 and EMS 166)

This is a course designed to provide knowledge in cardiology to fulfill the needs of the paramedic program. This course involves medical procedures and use of equipment as stated by the U.S. Department of Transportation, Michigan Department of Community Health, and the American Heart Association Advanced Cardiac Life Support standards. Topics include: rapid interpretation of EKGs, static recognition of EKGs, electrical therapy, pharmacological therapy, and basic algorithms for treatment of cardiac arrhythmias.

Prerequisite: Instructor Permission Required

Corequisites: EMS 160, EMS 161, EMS 162, EMS 164 and EMS 166.

EMS 164 PEDIATRIC ADVANCED LIFE SUPPORT (2 CR)

(Formerly EMS 235 with EMS 174 and EMS 176)

This course is designed to provide the paramedic student with the skills and knowledge to handle pediatric emergencies in the pre-hospital setting. Pediatric patients are not treated as "young" adults. They are a distinct population with different responses to injuries than adults.

Prerequisite: Instructor Permission Required

Corequisites: EMS 160, EMS 161, EMS 162, EMS 163 and EMS 166.

EMS 166 PARAMEDIC CLINICAL: I (3 CR)

This course is designed to provide the first semester clinical hours necessary to meet the requirements of the Michigan Department of Community Health Paramedic curriculum. This course includes clinical rotations at various sites including ambulance, hospital and skilled care facilities. In addition, classroom time is scheduled to review clinical procedures and review progress of the students.

Prerequisite: Instructor Permission Required

Corequisites: EMS 160, EMS 161, EMS 162, EMS 163 and EMS 164.

EMS 170 PARAMEDIC ADVANCED PRACTICE: II (4.25 CR)

(Formerly EMS 225 with EMS 171, EMS 172 and EMS 173)

This course is designed to prepare the student for licensure as a paramedic in the state of Michigan. The course involves medical procedures and use of equipment as prescribed by the U.S. Department of Transportation, the Michigan Department of Community Health, and Jackson County Medical Control Authority. Topics include: advanced life support in gynecological emergencies, behavioral emergency management, gastrointestinal emergencies, lab test analysis, and other medical emergencies.

Prerequisites: EMS 160, EMS 161, EMS 162, EMS 163, EMS 164 and EMS 166.

Corequisites: EMS 171, EMS 172, EMS 173, EMS 174, EMS 176

EMS 171 PARAMEDIC SKILL LAB: II (2 CR)

(Formerly EMS 225 with EMS 170, EMS 172 and EMS 173)

This course is designed to provide the paramedic student with the skills as prescribed by the Michigan Department of Community Health (MDCH) for the paramedic curriculum. This course includes skill practice and scenarios (both computer and classroom).

Prerequisites: EMS 160, EMS 161, EMS 162, EMS 163, EMS 164, and EMS 166.

Corequisites: EMS 170, EMS 172, EMS 173, EMS 174, and EMS 176

EMS 172 PARAMEDIC PHARMACOLOGY: II (2.25 CR)

(Formerly EMS 225 with EMS 170, EMS 171 AND EMS 173)

This course is designed to provide pharmacological information on the remaining non-cardiac drugs, which a paramedic will experience in the pre-hospital and hospital setting. This course is based on the paramedic education program requirements as set by the Michigan Department of Health.

Prerequisites: EMS 160, EMS 161, EMS 162, EMS 163, EMS 164 and EMS 166.

Corequisites: EMS 170, EMS 171, EMS 173, EMS 174 and EMS 176

EMS 173 PARAMEDIC CARDIOLOGY: II (2.25 CR)

(Formerly EMS 225 with EMS 170, EMS 171 and EMS 172)

This course is designed to provide knowledge in cardiology to fulfill the needs of the AEMT (Paramedic) program. This course involves medical procedures and use of equipment as stated by the U.S. Department of Transportation, Michigan Department of Community Health, and the American Heart Association Advanced Cardiac Life Support standards. Topics include pathophysiology of heart disorders, 12 lead EKG interpretation, pediatric ACLS, and pharmacological therapy.

Prerequisites: EMS 160, EMS 161, EMS 162, EMS 163, EMS 164 and EMS 166.

Corequisites: EMS 170, EMS 171, EMS 172, EMS 174 and EMS 176

EMS 174 PARAMEDIC ADVANCED PRACTICE: III (4.25 CR)

(Formerly EMS 235 with EMS 164 and EMS 176)

This course provides the paramedic student the knowledge in the transport of patients with special considerations and advanced EMT operations as prescribed in the U.S. Department of Transportation's paramedic curriculum. Student will take a comprehensive exam at the conclusion of this course for certification by Jackson College. This certification can be used as evidence of completion for the National Registry Exam (passage of which leads to licensing in most U.S. states).

Prerequisites: EMS 160, EMS 161, EMS 162, EMS 163, EMS 164 and EMS 166.

Corequisites: EMS 170, EMS 171, EMS 172, EMS 173 and EMS 176

EMS 176 PARAMEDIC CLINICAL: II (3 CR)

(Formerly EMS 235 with EMS 164 and EMS 174)

This course is designed to provide the second semester clinical hours necessary to meet the requirements of the Michigan Department of Community Health Paramedic curriculum. This course includes clinical rotations at various sites including ambulance, hospital and skilled care facilities. In addition, classroom time is scheduled to review clinical procedures and review progress of the students.

Prerequisites: EMS 160, EMS 161, EMS 162, EMS 163, EMS 164 and EMS 166.

Corequisites: EMS 170, EMS 171, EMS 172, EMS 173 and EMS 174

* You may meet this prerequisite based on your course placement, ACT score or successful college coursework. Visit www.jccmi.edu for current assessment options and requirements.

EMS 280 EMS INSTRUCTOR COORDINATOR I (4 CR)

This course is the first of three consecutive courses designed to prepare currently licensed EMT or AEMT for State EMS Instructor Coordinator Licensure. This course is a Michigan Department of Community Health EMS and Trauma Systems section approved program. This course includes state mandated modules with a primary focus on educational pedagogy related to teaching EMS. The first semester includes: Blooms Taxonomy, creating lessons, classroom management, critical thinking and assessment, etc.

Prerequisite: Licensed EMT-B, EMT-I or EMT-P with a minimum of three years of field experience. Instructor Permission Required.

EMS 282 EMS INSTRUCTOR COORDINATOR II (4 CR)

This course is the second of three consecutive courses designed to prepare currently licensed EMT or AEMT for State EMS Instructor Coordinator Licensure. This course is a Michigan Department of Community Health EMS and Trauma Systems section approved program. This course includes state mandated modules with a primary focus on state requirements for EMS education. This semester includes; guided student teaching, guidance in didactic and laboratory skills, information related to adhering to state mandates policies and procedures EMS education. Instructor Permission Required. All EMS students must complete EDU 290 Instructional Skills Workshop as the third course component.

Prerequisite: EMS 280

Corequisite: EDU 290

EMS 245 PARAMEDIC CLINICAL INTERNSHIP

This course is designed to provide the field internship as prescribed by Michigan Department of Transportation and the requirements of the Michigan Department of Community Health paramedic curriculum. This course is the last course taken as part of the paramedic program. This course includes clinical rotations at ambulance services as the lead paramedic under the supervision of a field paramedic. Students are expected to complete their clinical competencies during this class. In addition, classroom time is scheduled to review clinical procedures and review progress of the students. This course includes up to eight hours of medical simulation to help achieve any missing paramedic competencies.

Prerequisites: EMS 170, EMS 171, EMS 172, EMS 173, EMS 174 and EMS 176

Engineering (EGR)

EGR 153 ENGINEERING DRAWING (4 CR)

Students examine the communication aspects of graphics emphasizing sketching and computer-aided drafting and design. This course covers simple pictorial and working drawings, orthographic and isometric projections, an introduction to the mechanical design process, the basics of free hand sketching and of computer aided drafting (CAD), and the computer as a design tool.

EGR 261 ENGINEERING MECHANICS I (4 CR)

Students survey the fundamentals of solid mechanics. This course covers equilibrium, static equivalence, stress, strain and material behavior, particular application to deflection of beams and axial, bending, torsion, shear and combined stresses, as well as an introduction to stability of columns.

Prerequisite: MAT 154

EGR 262 ENGINEERING MECHANICS II (4 CR)

Students examine the principles of dynamics, including the motion of a particle, the kinematics and kinetics of plane motion of rigid bodies, the principle of work and energy, impulse and momentum and mechanical vibrations.

Prerequisite: EGR 261

English (ENG)

ENG 080 READING ESSENTIALS (4 CR)

This course provides the most fundamental support for students who need to develop college-level reading skills. Students must show an ability to read some pre-college writing independently. They are provided with a structured approach to comprehending college-level writing. Student writing is a significant component.

ENG 085 COLLEGE READING (4 CR)

This course is intended for students who have developed their reading skills nearly to the college level but need further development of comprehension and vocabulary skills. Using a wide range of reading materials, students will employ metacognitive processes to enhance understanding and will find connections between a text and 1) their own lives, 2) the world and 3) other texts. They will also learn and practice strategies for expanding vocabulary. Student writing is a significant component of the course.

*Prerequisite: ENG 080**

ENG 090 INTRODUCTION TO WRITING (4 CR)

This is an intensive course in composition for students who need supplementary help in writing. A personal approach helps students enhance their writing abilities, resolve writing problems and explore writing strategies. An end-of-semester portfolio is required.

*Prerequisite: ENG 080**

ENG 091 INTRODUCTION TO COLLEGE WRITING (3 CR)

(Fulfills same requirements as ENG 090)

This is an intensive course to give students a strong foundation for the work of English 131. Students explore genres in order to meet the expectations of audiences for a variety of purposes. A personal approach helps students enhance their writing abilities, resolve writing problems, and explore writing strategies. An end-of-the-semester portfolio is required.

Prerequisite: ENG 080

Corequisite: ENG 131A

ENG 131 WRITING EXPERIENCE I (3 CR)

This is an intensive writing course. Narrative and descriptive modes are stressed. Basic research strategies are introduced. An end-of-the-semester portfolio is required.

Prerequisites: ENG 085 and ENG 090**

ENG 131A WRITING EXPERIENCE I (3 CR)

(Same as ENG 131)

This is an intensive writing course. Narrative and descriptive modes are stressed. Basic research strategies are introduced. An end-of-the-semester portfolio is required.

*Prerequisite: ENG 085**

ENG 132 WRITING EXPERIENCE II (3 CR)

This is an intensive writing course. Analytical and persuasive modes are stressed. Advanced research writing strategies are used. Database and primary research methods are emphasized. An end-of-the-semester portfolio is required.

Prerequisite: ENG 131

ENG 186 INTRODUCTION TO PHOTOJOURNALISM (3 CR)

Use of the 35-millimeter single reflex camera and introduction to digital camera use. Camera operation and darkroom procedures (film development and enlargements) are covered. Instruction emphasizes photographic equipment, lenses, exposure and composition.

ENG 201 ADVANCED COMPOSITION (3 CR)

An advanced course offering. Selected students practice peer tutoring and research writing. Emphasis is placed on student writing conferences, process writing and standard research methods. End of the semester portfolio of research papers and 16 hours of writing activities and workshops are required. Additionally, all students enrolled in this course work as tutors in the Writing Center.

Prerequisite: Instructor Permission Required

ENG 210 INTRODUCTION TO FILM (3 CR)

Students are introduced to film as a visual art and to basic film terms and techniques, such as composition, movement, editing and sound. Readings in film history, genre, theory and criticism. Includes JC Winter Film Series.

Prerequisites: ENG 085 and ENG 131*

ENG 232 TECHNICAL & BUSINESS WRITING (3 CR)

A course designed to provide practice in a variety of written and oral communications to meet the requirements of the workplace. Projects may include descriptions, instructions, résumés, proposals, reports or online documents. It involves frequent writing, both in and out of class, as well as oral presentations, collaborative activities and individual conferences.

Prerequisites: ENG 085 and ENG 131*

ENG 236 WOMEN IN A CHANGING SOCIETY (3 CR)

(Same as SOC 236)

Inquiry into historical and changing roles of women, looking at causes of these changes and their effects on women and society through literature, sociology, biology and history.

Prerequisites: ENG 085 and ENG 131*

ENG 246 SHORT STORY & NOVEL (3 CR)

Students are introduced to traditional and contemporary fictional genres. This course emphasizes understanding, appreciation and the critical analysis of narrative art. Selections for study are chosen from English and American literature as well as world literature in translation.

Prerequisites: ENG 085 and ENG 131*

ENG 247 POETRY & DRAMA (3 CR)

Students are introduced to lyric and dramatic genres. This course emphasizes understanding, appreciation and enjoyment of poetry and theatre as language performances and literary forms. Selections for study are chosen from English and American literature as well as world literature in translation.

Prerequisites: ENG 085 and ENG 131*

ENG 249 AFRICAN-AMERICAN LITERATURE (3 CR)

Survey of the literature of African-American writers. Emphasis is on the major writers in narrative, poetry, fiction, essay and drama.

Prerequisites: ENG 085 and ENG 131*

ENG 252 SHAKESPEARE (3 CR)

Students read representative plays and are introduced to the Elizabethan world. Course emphasizes developing understanding, appreciation and critical analysis skills.

Prerequisites: ENG 085 and ENG 131*

ENG 254 CHILDREN'S LITERATURE (3 CR)

Students survey the various genres of children's literature from a critical point of view. Course emphasizes developing student competency in oral reading and presentation of children's literature.

Prerequisites: ENG 085 and ENG 131*

ENG 255 AMERICAN LITERATURE - 19TH CENTURY (3 CR)

Students examine the development of a distinctive American literature and culture during the 19th century. Students read selections from many writers, with emphasis on major figures such as Hawthorne, Melville, Thoreau, Emerson, Poe, Dickinson, Whitman, Douglass and Jacobs.

Prerequisites: ENG 085 and ENG 131*

ENG 256 AMERICAN LITERATURE - 20TH CENTURY (3 CR)

Students examine the literature and culture of America from 1890 to the present, with emphasis on the development of organic and post-modern writing in narrative, poetic and critical modes.

Prerequisites: ENG 085 and ENG 131*

ENG 257 WORLD LITERATURE I (3 CR)

Students compare major themes and writers from Africa, America, Asia and Europe.

Prerequisites: ENG 085 and ENG 131*

ENG 261 CREATIVE WRITING I (3 CR)

Students experiment with writing poetry, fiction, drama and creative nonfiction for discussion and criticism. Students invent, collaborate and revise before submitting a portfolio of their work. Contemporary readings and visiting authors/videos enhance the class, but primary attention is given to students' creative writing process.

Prerequisites: ENG 085 and ENG 131*

ENG 262 CREATIVE WRITING II (3 CR)

Students in this workshop write fiction, poetry and other forms, and present writing for criticism and discussion. Contemporary readings emphasize participation of writers in a living act. Students write and workshop fiction, poetry and other genres. Contemporary readings emphasize writing invention and writing communities.

Prerequisite: ENG 261

** You may meet this prerequisite based on your course placement, ACT score or successful college coursework. Visit www.jccmi.edu for current assessment options and requirements.*

Entrepreneurship (ENT)

ENT 101 ENTREPRENEURSHIP: CREATING YOUR OWN JOB (3 CR)

There will be only one constant throughout your career, and that constant is change. The preferences of consumers are constantly changing, entire industries are rising and falling, and hard-working people often are finding themselves looking for a job. This course provides you with the foundation to design your own job, whether in the context of an existing organization (i.e., as an "intrapreneur") or as someone who starts a new enterprise (i.e., as an "entrepreneur"). In this course you will learn more about your own strengths and weaknesses, as well as the key characteristics shared by successful entrepreneurs. You'll also gain skills for matching your strengths with a business idea that fits you well, so that both you and your customers will benefit. Finally, you will begin developing analytical tools to help make sound decisions in a rapidly changing world.

Prerequisites: CIS 095, ENG 085* and ENG 090**

ENT 102 ENTREPRENEURIAL MARKETING: FINDING YOUR NICHE (3 CR)

Organizations grow by serving the needs of customers. These needs are frequently changing; at times even the customers themselves don't accurately express what they need. The key to entrepreneurial success is identifying the underlying needs of specific niches within the changing marketplace and then devising a plan which matches your driving passion and unique capabilities with the specific needs you have identified. This process is entrepreneurial marketing. In this course you will work with market research tools and develop analytical processes for identifying the needs of target customers, and you will produce marketing plans designed to capitalize on your unique advantages in order to delight customers. Simultaneously, you will begin developing a brand identity intended to become the preferred choice among your target customers.

Prerequisite: ENT 101

ENT 169 BUSINESS PLAN (3 CR)

The student will be able to evaluate their business concept and write a sound business plan for their entrepreneurial venture. In the process of doing so, the student will be able to assess the strengths and weaknesses of a business concept; collect and organize market research data into a marketing plan; and prepare the financial projects for their business venture. In addition, students will be able to identify and evaluate various resources available for funding the entrepreneurial venture. To be successful in this course, basic computer skills are required.

Prerequisites: CIS 095, ENG 085*, ENG 090*, ENT 101 and MAT 020* or higher*

First Year Seminar (FYS)

FYS 105 COLLEGE SUCCESS SEMINAR (1 CR)

This first-year experience course focuses on the transition of high school graduates into their first semester of college with an emphasis on developing study strategies, teamwork and problem solving. Basic academic areas will be reviewed to improve skill levels prior to fall semester.

FYS 110 LIFE MAPS (1 CR)

This first-year experience course equips students for transitions in education and life. Students will be actively involved in learning and integrating practical applications to promote success. Students will develop a learning portfolio and an educational plan while enhancing critical thinking and study strategies.

FYS 120 PROFESSIONAL SEMINAR (1 CR)

This first-year experience course introduces students to baccalaureate-track, accelerated programs with an emphasis on time management, online learning strategies, web resources and effective study strategies for fast-paced courses. The course will assist students in adjusting to a cohort-based, accelerated bachelor's degree program.

FYS 131 NAVIGATING COLLEGE AND LIFE (2 CR)

Students will develop and apply soft skills such as self-management, emotional intelligence, interdependence and resiliency in order to promote success in education and in life. Learners will become better equipped as self-advocates in navigating the academic advising and financial aid systems of higher education. Student Education Plans (SEP) and the Life Maps Projects will be completed, and academic success strategies are introduced and reinforced throughout the course.

FYS 150 HONORS LEADERSHIP (2 CR)

This course introduces students to the mission, vision and values of Jackson College and introduces students to leadership principles with individual and group service learning projects centered on improving JC's connections with area high schools, the community and stakeholders.

Prerequisite: Instructor Permission Required

French (FRN)

FRN 131 ELEMENTARY FRENCH I (4 CR)

Introduces and develops the four skills of language learning: listening, speaking, reading and writing, with special emphasis on listening and speaking.

*Prerequisite: ENG 085**

FRN 132 ELEMENTARY FRENCH II (4 CR)

Provides increased practice in the basic language skills: listening, speaking, reading and writing.

Prerequisite: FRN 131

Geology (GEL)

GEL 109 EARTH SCIENCE (4 CR)

This course serves as a foundation for the Earth sciences and Earth science majors. Emphasis is placed on laboratory experience and class discussions to reinforce scientific principles. Earth science case studies are covered in detail. In laboratory, the students will learn how to apply basic scientific principles through active learning and application. This course has a laboratory component.

Prerequisites: ENG 085, ENG 090* and MAT 033* or higher*

GEL 160 INTRODUCTION TO GEOLOGY (4 CR)

The course covers minerals, rocks, earthquakes and volcanoes. It also covers the landscapes and behaviors of continents and oceans. Diagrams, photographs, topographic maps, Internet resources and hands-on exercises are utilized to support the concepts. Course includes a laboratory component.

Prerequisites: ENG 085 and ENG 090**

Geography (GEO)

GEO 131 PHYSICAL GEOGRAPHY (3 CR)

The course begins with maps and grid systems. Map exercises are used all semester to enhance the textbook. Other topics include meteorology, vegetation, earth materials and a range of tectonic and landscape subjects.

Prerequisites: ENG 085 and ENG 090**

GEO 132 WORLD REGIONS (3 CR)

This course covers all regions of the world from a human perspective. Topics include resources, population, settlements, agriculture, manufacturing and transportation. There is special emphasis on Internet research in the classroom.

Prerequisites: ENG 085 and ENG 090**

** You may meet this prerequisite based on your course placement, ACT score or successful college coursework. Visit www.jccmi.edu for current assessment options and requirements.*

German (GER)

GER 131 ELEMENTARY GERMAN I (4 CR)

Introduces and develops the four skills of language learning: listening, speaking, reading and writing, with special emphasis on listening and speaking.

*Prerequisite: ENG 085**

GER 132 ELEMENTARY GERMAN II (4 CR)

Continuation of GER 131 with increased practice in the basic language skills: listening, speaking, reading and writing with special emphasis on listening and speaking.

Prerequisite: GER 131

History (HIS)

HIS 120 ANCIENT HISTORY (3 CR)

This course attempts to answer the question, "Where did it all begin?" with a survey of the politics, art and religion of the ancient world from history's beginning in Sumeria to the end of the ancient world when the Western Roman Empire faded out of sight in 476 A.D.

Prerequisites: ENG 085 and ENG 090**

HIS 125 AFRICAN-AMERICAN HISTORY (3 CR)

Examines the role African-Americans have historically played in the political, economic and social construction of America.

Prerequisites: ENG 085 and ENG 090**

HIS 131 WESTERN CIVILIZATION TO 1555 (4 CR)

HIS 131, together with HIS 132, constitutes the basic history course, as well as an introduction to the humanities. This course examines the roots of Western culture and its development through the Reformation. The course also surveys the social, philosophical, scientific, artistic, religious and political setting evolution with emphasis on the role of ideas and their consequences in the history of the human kind from the beginning to the 16th century.

Prerequisites: ENG 085 and ENG 090**

HIS 132 WESTERN CIVILIZATION 1555 TO PRESENT (4 CR)

HIS 131, together with HIS 132, constitutes the basic history course, as well as an introduction to the humanities. This course is a continuation of HIS 131, emphasizing the development of new political areas, economic and social theories, the evolution and expansion of modern states, and efforts to control international tensions from the 16th century to the present.

Prerequisites: ENG 085 and ENG 090**

HIS 231 DEVELOPMENT OF THE U.S. THROUGH THE CIVIL WAR (3 CR)

This course is the study of American national history beginning with the colonization to the Civil War. Themes include exploration and settlement, development of political theory, development of the West and its influence on the country, the growth of sectionalism and the Civil War.

Prerequisites: ENG 085 and ENG 090**

HIS 232 DEVELOPMENT OF THE U.S. FROM THE CIVIL WAR (3 CR)

This course examines the period from the Civil War and Reconstruction to the present day. Emphasizing industrial, commercial and agricultural expansion; intellectual currents; outstanding social changes; the nation's expanding role in the world affairs, and the Cold War.

Prerequisites: ENG 085 and ENG 090**

HIS 235 20TH CENTURY HISTORY (3 CR)

Examination of national and international developments in the past century focusing on such matters as colonialism, global warfare, and emerging nations, appearance and disappearance of communism. In addition, polarization of wealth and power, the revolution in technology, communication, businesses and industry, the conflict between the globalization movement and national tendencies will be examined.

Prerequisites: ENG 085 and ENG 090**

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Health Occupations (HOC)

HOC 130 INTRODUCTION TO HEALTH OCCUPATIONS (3 CR)

This course will provide the student with an overview of the health care field. Information that is covered serves as a solid foundation for all students in health sciences or health occupations, regardless of the particular health care profession they are interested in pursuing. Topics include: careers in health care, legal and ethical responsibilities, professionalism, interactions between and reaction of patients in normal and altered states, patient and personal safety and cultural diversity.

HOC 132 ALLIED HEALTH PHARMACOLOGY (3 CR)

This course is designed to provide medical assistant, medical insurance coder/biller, and other allied health professions students with basic pharmacology principles through a body systems approach. Students will learn and develop an understanding of the usage of prescription and over the counter medications and the effect on the body as a whole. Additionally, students will review basic mathematic skills to apply to and perform mathematical conversions and dosage calculations.

Prerequisites: MAT 033 or MAT 035 or MAT 039 and BIO 132 or BIO 254 or LPN 141 or MOA 141

HOC 135 ELECTROCARDIOGRAPHY TECHNICIAN (4 CR)

This course will consist of an overview of the cardiovascular system, proper documentation, and vital signs, along with HIPAA compliance and infection control in the clinical setting. The main focus of this course will be on how to perform and analyze an EKG and recognize various arrhythmias. Students will also learn about exercise electrocardiography and how to perform ambulatory monitoring. The course will also include extensive instruction on cardiovascular pharmacology.

Prerequisites: ENG 085 and MAT 020* or higher*

HOC 140 PHARMACY TECH CONCEPTS & CALCULATIONS (4 CR)

This course applies mathematics in the calculations required for determination of proper dosages, conversion operations, as well as in preparation of parenteral solutions for injections, IVs, etc. Detailed instruction in the techniques used in dosage preparation aseptic techniques will be provided. Knowledge of pharmaceutical and medical terms, abbreviations, and symbols commonly used in the prescribing, dispensing and charting medications. Demonstrating drug purchasing and inventory control concepts. Preparation and pretesting for sitting for the Pharmacy Technician Certification Board (PTCB Exam) included.

Prerequisites: MAT 131 or higher and NUR 121

HOC 145 PHLEBOTOMY TECHNICIAN (4 CR)

This course will prepare students for performing phlebotomy procedures in a variety of healthcare settings. Students will learn about the roles and responsibilities of the phlebotomist which will include infection control procedures, legal and ethical issues, working with special populations and situations, and proper specimen collection and handling procedures. The focus will be on performing venipuncture and capillary procedures properly to obtain specimens for various laboratory testing.

Prerequisites: ENG 085 and MAT 020* or higher*

HOC 201 QUALITY IMPROVEMENT-HEALTH CARE (3 CR)

This course will provide a fundamental knowledge of sustaining quality improvement within a health care organization. Areas of studies will focus on accreditations, licensure, certifications, patient safety, employee safety, and quality indicators.

Prerequisites: ENG 085 and MAT 020* or higher*

HOC 202 INTRODUCTION TO HEALTH INFORMATICS (3 CR)

This course applies fundamental knowledge of the processes of health systems via multiple data systems within a health care organization. Areas of studies will focus on health record input, tracking of medication distribution and quality indicators.

Prerequisites: ENG 085 and MAT 020* or higher*

Health & Physical Fitness (HPF)

HPF 110 GOLF (1 CR)

Learn beginning skills, rules and courtesies. This course emphasizes the swing, chipping and putting. Golf clubs are not provided.

HPF 119 INTRODUCTION TO YOGA (1 CR)

Participants will begin to develop yoga as a practice to facilitate lifelong skills enhancing physical, emotional and intellectual strength, flexibility and power. Emphasis is on conscious awareness and internal focus through asana practice, relaxation, body alignment and breathing techniques. Students are required to bring their own yoga mat.

HPF 139 SPINNING (1 CR)

A fast-paced, invigorating workout to music utilizing specialized "spinning" stationary exercise bikes. Students are able to exercise at their own pace. The class is designed for a wide range of fitness levels.

HPF 143 YOGA II (1 CR)

Participants develop yoga as a practice to facilitate lifelong skills, enhancing physical, emotional, and intellectual strength, flexibility and power. The course emphasizes conscious awareness and internal focus through asana practice, body alignment, breathing techniques, relaxation and beginning meditation. Students are required to bring their own yoga mat.

Prerequisite: HPF 119

HPF 160 WELLNESS (1 CR)

Learn the theoretical and practical relationship of lifestyle to productivity. Students examine attitudes and behaviors that enhance quality of life and maximize personal potential. Students have opportunities for self-evaluation.

*Prerequisite: ENG 085**

HPF 161 PERSONALIZED FITNESS (1 CR)

A self-paced program in which students exercise independently in a JC supervised lab. Instructor's guidance is available to develop an individualized plan to achieve personal health and fitness goals.

HPF 169 AEROBIC RHYTHMS (1 CR)

Students at various fitness levels participate in a choreographed exercise/dance and step class for the improvement of cardiovascular fitness, strength and flexibility.

HPF 182 LIGHT WALKING (1 CR)

Use walking to develop cardiovascular fitness and lose weight. This course emphasizes both muscular endurance and flexibility.

HPF 186 WEIGHT TRAINING & WELLNESS (3 CR)

The principle course focus is that of self-responsibility for well-being. Concentration is on aspects of wellness and conditioning that can be personally controlled and changed. Included are didactic and practical applications of principles for a comprehensive conditioning and wellness program in the context of creating a healthy lifestyle from a wellness perspective.

*Prerequisite: ENG 085**

HPF 187 INTERVAL TRAINING (1 CR)

Participate in a vigorous running workout. Intervals ranging in distance from 200-800 meters form the basis of the workout.

HPF 221 JAZZ TECHNIQUES (3 CR)

(Same as DAN 121)

Beginner to intermediate level class exploring contemporary jazz and modern dance techniques. Includes an introduction to the fundamentals of choreography, exploration of the elements of dance, and history of dance.

HPF 268 ADVANCED WEIGHT TRAINING (2 CR)

Participate in fitness evaluations and individually prescribed programs designed to develop strength, aerobic endurance and flexibility.

Prerequisite: HPF 168 or HPF 186

HPF 277 STRESS MANAGEMENT (2 CR)

Examine current information and techniques related to stress management. Students learn basic concepts and skills related to the holistic management of stress.

*Prerequisite: ENG 085**

HPF 283 MANAGING STRESS AND HOLISTIC HEALTH (3 CR)

This course provides students with a holistic approach to health focusing on competencies to manage stress. Students learn the relationship of lifestyle to their health. Through the reflective use of specific skills, tools and new knowledge students have an increased opportunity to enhance their lives and the lives of those around them.

Prerequisites: ENG 085 and ENG 090**

Humanities (HUM)

HUM 131 CULTURAL CONNECTIONS (3 CR)

This interdisciplinary course examines contemporary issues, their human and technological components, and their historical precedents through art, music, literature and philosophy.

Prerequisites: ENG 085 and ENG 090**

HUM 250 STUDIES IN LEADERSHIP (3 CR)

The course provides emerging and existing leaders the opportunity to explore the concept of leadership and to develop and improve their leadership skills. The course integrates readings from the humanities, experiential exercises, films and contemporary readings on leadership.

Prerequisite: FYS 150

Licensed Practical Nursing (LPN)

LPN 131 FOUNDATIONS OF NURSING (6 CR)

Introduction to the nursing process and their role as caregiver. Maslow's hierarchy of needs is explored, along with nursing skills that meet basic physiologic and safety needs. Laboratory and clinical experience provide the student an opportunity to demonstrate initial application of the roles of caregiver and members of the discipline in a highly structured, supervised setting.

LPN 132 MEDICATIONS (3 CR)

Introduction to the purpose, use and action of medication in meeting basic human needs. Safety and legal implications discussed. Nursing process serves as the framework for understanding client needs during medication therapy.

Prerequisites: BIO 253 and BIO 254, LPN 141 or MOA 141 and MAT 033 or higher*

LPN 141 BODY STRUCTURE & FUNCTION (4 CR) (SAME AS MOA 141)

This course is a body systems approach to the body structures and functions providing a foundation of understanding normal and abnormal body functions and disease processes.

*Prerequisite: ENG 085**

** You may meet this prerequisite based on your course placement, ACT score or successful college coursework. Visit www.jccmi.edu for current assessment options and requirements.*

LPN 180 NURSING CARE OF ADULTS – IA (6 CR)

Student will use the nursing process to implement the caregiver role with adult clients experiencing basic physiologic needs. How disease states of core systems alter clients' needs and their ability to meet those needs is explored. Clinical experience provides students the opportunity to demonstrate the roles of caregiver and member of the discipline.

Prerequisites: LPN 131

LPN 181 NURSING CARE OF ADULTS – IB (6 CR)

Student will use the nursing process to implement the caregiver role with adult clients experiencing more complex physiologic needs. How disease states and co-morbidities affect clients' needs and their ability to meet those needs is explored. Clinical experience provides students the opportunity to demonstrate increasing organizational skills in their roles of caregiver and member of the discipline.

Prerequisites: LPN 131

LPN 187 ROLE OF THE PRACTICAL NURSE (1 CR)

This course will review the ethical/legal responsibilities of the LPN along with the scope of practice of the LPN as defined by the Michigan Public Health Code. Issues related to types of health care organizations, LPN organizations, continuing education, and licensure will be covered. NCLEX-PN and licensure forms will be received with instructions regarding completion of forms as well as the testing/licensure process. Information on the search for employment and job-seeking skills will be included.

Prerequisites: LPN 131, LPN 180 and LPN 181

LPN 185 NURSING CARE OF ADULTS – II (5 CR)

Use the nursing process to implement the caregiver role with adult clients experiencing oncology, immune, renal, sensory, reproductive and musculoskeletal health conditions. Maslow's hierarchy of needs is utilized as the framework for understanding client responses to disease states. Emphasis placed on the special needs of elderly clients. Clinical experiences are designed to reinforce theory and demonstrate the roles of caregiver and member of the discipline.

Prerequisites: LPN 180 and LPN 181

LPN 186 MATERNAL CHILD CONCEPTS (5 CR)

Extend the use of the nursing process to the childbearing and childrearing clients. Maslow's hierarchy of needs is utilized as a framework to care for the client who has a well-defined health care problem in a structured setting.

Prerequisites: LPN 180 and LPN 181

Mathematics (MAT)

MAT 020 PRE-ALGEBRA (4 CR) (Formerly MTH 098)

This course reviews the arithmetic of fractions, decimals and signed numbers with applications. Students will learn the mathematics of proportion and percent with applications, basic statistical graphs and charts, geometry and measurement (including the metric system), and introductory algebraic concepts. The mathematics department recommends that the prerequisite not be more than two years old. If the prerequisite is more than two years old, the recommendation is course placement assessment be taken or the prerequisite be retaken to ensure the success of the student.

MAT 033/ MAT 033A ALGEBRA FOR STATISTICS (4 CR)

As an alternative pathway toward college-level mathematics, this course introduces fundamental algebra concepts within an underlying framework of statistics and mathematical modeling based on real-world data. Major concepts and themes include: problem solving and experimental design; unit analysis and error in measurement; dimensional analysis and scientific notation; representing data and coordinate graphing; introduction to basic descriptive statistics and probability theorems; basic geometric principles (area, volume, perimeter); arithmetic operations on numbers, ratios, summations, and percents; solution and manipulation of formulas; modeling relationships (linear and exponential regression); solving equations and inequalities; and function arithmetic and graphing. Appropriate technology includes a graphing calculator. The mathematics department recommends that the prerequisite not be more than two years old. If the prerequisite is more than two years old, then the recommendation is that the course placement exam be taken or the prerequisite be retaken to ensure the success of the student.

*Prerequisite: MAT 020**

MAT 035/MAT 035A THINKING MATHEMATICALLY (4 CR)

This course is a study of various topics including the following: problem solving, critical thinking and an introduction to estimation; set theory; linear algebraic equations and inequalities; linear functions and their graphs; linear systems of equations; consumer and financial mathematics; measurement and geometry. This course is for students who are pursuing degrees and programs that do not require courses in statistics, pre-calculus and the calculus sequence. The mathematics department recommends the prerequisite not be more than two years old. If the prerequisite is more than two years old the recommendation is the course placement assessment be taken or the prerequisite be retaken to ensure the success of the student.

*Prerequisite: MAT 020**

MAT 039 BEGINNING ALGEBRA (4 CR)

Students will build algebraic skills working with linear, polynomial, rational and radical expressions and equations. The course particularly emphasizes graphs and equations of lines, factoring techniques, and methods of solving quadratic equations. The mathematics department recommends that the prerequisite not be more than two years old. If the prerequisite is more than two years old, then the recommendation is that the course placement exam be taken or the prerequisite be retaken to ensure the success of the student.

*Prerequisite: MAT 020**

MAT 131 INTERMEDIATE ALGEBRA (4 CR) (Formerly MTH 131)

This course emphasizes simplifying expressions, solving equations, and graphing functions, including linear, quadratic, polynomial, rational, radical, exponential and logarithmic. Problem solving and mathematical modeling are integrated throughout. Appropriate technology includes a graphing calculator. The mathematics department recommends the prerequisite not be more than two years old. If the prerequisite is more than two years old the recommendation is the course placement assessment be taken or the prerequisite be retaken to ensure the success of the student.

*Prerequisite: MAT 039**

MAT 133 INTRODUCTION TO PROBABILITY & STATISTICS (4 CR) (Formerly MTH 133) (Same as CIS 203 and PSY 144)

This course is an introduction to experimental design, data representation, basic descriptive statistics, probability theorems, frequency distributions and functions, binomial and normal probability distributions and functions, probability density functions, hypothesis testing, statistical inference, Chi-square analysis, linear regression, correlation and application of the above in making informed, data driven decisions in real-world contexts. Both graphing calculators and computer-based statistical software (Microsoft® Excel) will be used. If the prerequisite is more than two years old, then the mathematics department recommends the course placement exam be taken or the prerequisite be retaken to ensure the success of the student.

Prerequisite: MAT 033 or MAT 131 or higher*

** You may meet this prerequisite based on your course placement, ACT score or successful college coursework. Visit www.jccmi.edu for current assessment options and requirements.*

MAT 135 FINITE MATHEMATICS (4 CR)*(Formerly MTH 145)*

This course is for students whose programs do not require trigonometry (or the calculus sequence). The topics included are linear, exponential, quadratic, polynomial and logarithmic functions and models: systems of linear equations; linear regression; mathematics of finance and financial modeling; matrices, linear programming; permutations; combinations, probability theory; probabilistic simulations; decision theory; descriptive statistics; and Markov chains. The mathematics department recommends the prerequisite not be more than two years old. If the prerequisite is more than two years old the recommendation is the course placement assessment be taken or the prerequisite be retaken to ensure the success of the student.

Prerequisite: MAT 035 or MAT 131 or higher*

MAT 139 COLLEGE ALGEBRA (4 CR)

Algebraic functions, graphs and models are addressed. Emphasis is placed on the following function types: polynomial, exponential, logarithmic, rational and radical. In all topic areas, covered content includes simplifying expressions, solving equations, graphing using transformations, mathematical modeling and problem solving.

*Prerequisite: MAT 039**

MAT 141 PRE-CALCULUS (5 CR)

Major emphasis is on the concept of functions. Study polynomial, rational, exponential, logarithmic, trigonometric and inverse trigonometric functions, their properties, graphs, and related equations and applications. Additional topics include systems of equations, matrices, conic sections, sequences and series, and probability. A graphing calculator is required and used extensively. The mathematics department recommends that the prerequisite not be more than two years old. If the prerequisite is more than two years old, then the recommendation is that the course placement exam be taken or the prerequisite be retaken to ensure the success of the student.

*Prerequisite: MAT 139**

MAT 151 CALCULUS I (4 CR)*(FORMERLY MTH 151)*

First calculus course for business, mathematics, engineering and science students explores introductory plane analytic geometry, the derivative, the integral and their applications for algebraic, trigonometric, exponential and logarithmic functions. The mathematics department recommends that the prerequisite not be more than two years old. If the prerequisite is more than two years old, then the recommendation is that the course placement exam should be taken or the prerequisite be retaken to ensure the success of the student.

*Prerequisite: MAT 141**

MAT 154 CALCULUS II (5 CR)*(Formerly MTH 154)*

This course explores the following topics: methods and applications of the derivative and integral for inverse trigonometric and hyperbolic functions, indeterminate forms, series and polar/parametric representation of functions. Graphing calculator required. The mathematics department recommends the prerequisite not be more than two years old. If the prerequisite is more than two years old, the recommendation is the course placement exam be taken or the prerequisite be retaken to ensure the success of the student.

*Prerequisite: MAT 151**

MAT 210 FOUNDATIONS OF MATHEMATICS I (4 CR)*(Formerly MTH 210)*

This course provides background material for students preparing to teach at the elementary level and emphasizes the structure and properties of the number system. It also covers concepts, models in algorithms for whole numbers, integers, fractions, decimals and percents. Some additional hours of on-site field work may be required. The mathematics department recommends that the prerequisite not be more than two years old. If the prerequisite is more than two years old the recommendation is the course placement exam be taken or the prerequisite be retaken to ensure the success of the student.

*Prerequisite: MAT 131**

MAT 211 FOUNDATIONS OF MATHEMATICS II (4 CR)*(Formerly MTH 211)*

This course will provide the second semester of math content for elementary education majors. It is a continuation course for MAT 210; Foundations of Mathematics I. Topics include probability and statistics, geometry and measurement. The mathematics department recommends that the prerequisite not be more than two years old. If the prerequisite is more than two years old then the recommendation is that the course placement exam be taken or the prerequisite be retaken to ensure the success of the student.

Prerequisite: MAT 210

MAT 251 CALCULUS III (4 CR)*(Formerly MTH 251)*

Solid analytical geometry is integrated throughout this course covering the calculus of vector valued functions, multivariable functions, and vector fields with applications. Graphing calculator required. The mathematics department recommends that the prerequisite not be more than two years old. If the prerequisite is more than two years old then the recommendation is that the course placement exam be taken or the prerequisite be retaken to ensure the success of the student.

Prerequisite: MAT 154

MAT 254 DIFFERENTIAL EQUATIONS (4 CR)*(Formerly MTH 254)*

Explore solutions of first order differential equations, linear differential equations with constant coefficients, variation of parameters, series solutions, Laplace transforms, eigenvectors and eigenvalues and application to solution of systems of linear first order equations. Graphing calculator required. The mathematics department recommends that the prerequisite not be more than two years old. If the prerequisite is more than two years old, then the recommendation is that the course placement exam be taken or the prerequisite be retaken to ensure the success of the student.

Prerequisite: MAT 154

Manufacturing Technology (MFG)

MFG 105 BLUEPRINT READING (2 CR)

This course will provide the student with a working knowledge and understanding of a variety of mechanical and electrical blueprints. Students will learn to recognize and identify symbols and specifications common to modern industrial blueprints. Topics will include: lines and symbols, views, form, position, title blocks, sketching, features and sections.

MFG 115 GD & T (2 CR)

This course will provide the student with a working knowledge and understanding of dimensioning and tolerancing for specific design requirements on engineering drawings. Students are exposed to symbols, terms, datums, material conditions, form, profile, orientation, runout and location tolerances. Content includes use and understanding of the symbolic method of specification relating to tolerances being applied using ANSI Y14.5M.

*Prerequisite: MFG 105***MFG 150 MACHINING THEORY & METHODS (4 CR)**

This course instructs students in machine tool principles and practices used in industry. Safety, terminology, manual milling, lathe, grinding, drilling, basic CNC, measurement and various shop procedures are used to complete projects. A working knowledge of hand and machine tools is achieved through a series of lectures, demonstrations and hands-on projects.

MFG 160 MATERIALS/METALLURGY (2 CR)

This course will provide the student with a working knowledge of the properties, uses and treatment methods used to alter the properties of commonly used metals and alloys. This knowledge may be applied to the design, selection, processing and testing of metal parts.

MFG 164 BASIC FABRICATION (4 CR)

This course instructs students in standard fabrication principles and practices used in industry. Safety, terminology, material milling, lathe, grinding, sawing, drilling, tapping, riveting, sheet metal working, standard layout skills, measurement and standard shop procedures are used to complete various projects. A working knowledge of hand and machine tools is achieved through a series of lectures, demonstrations and hands-on projects.

*Prerequisite: MFG 105****MFG 166 PRECISION MACHINING METHODS (2 CR)**

This course instructs students in machine tool principles and practices used in industry. Safety, terminology, material milling, lathe, grinding, drilling, basic CNC, measurement and various shop procedures are used to complete projects. A working knowledge of hand and machine tools is achieved through a series of lectures, demonstrations and hands-on projects.

*Prerequisite: ENG 085****MFG 170 HYDRAULICS/PNEUMATICS (4 CR)**

This course provides instruction in the basics of hydraulic and pneumatic systems including pumps, valving, control assemblies and actuators. Provides a general understanding of basic laws and formulas used in simple hydraulic circuits, including standard hydraulic symbols, and maintenance procedures.

MFG 172 CNC THEORY (2 CR)

This course will review the development of computer numerical control (CNC), where CNC is used, terminology, and its advantages and shortcomings. Fundamentals of programming and tooling for basic CNC machining are also covered.

*Prerequisite: ENG 085****MFG 174 CNC PROGRAMMING (2 CR)**

This course will provide students with a better understanding of set-up and operations of CNC machine tools. Special emphasis is placed on time-saving techniques in programming and operations.

*Prerequisite: MFG 172***MFG 185 MAINTENANCE & TROUBLESHOOTING (3 CR)**

Covers methods and means used to troubleshoot and maintain machines typically found in a manufacturing environment. Problem symptoms, problem identification, maintenance records and systems will be covered.

MFG 190 DRIVE COMPONENTS & BEARINGS (2 CR)

This course instructs students in the principles, applications, and maintenance of various types of bearings and mechanical couplings, including ball and roller, powdered metal, nonmetallic, hydrostatic bearings, couplings, such as shear, torque limiting, floating and insulated, speed reducers, seals and gears.

MFG 200 BASIC GAUGES & MEASUREMENT (2 CR)

This course provides instruction in inspection tools and inspection procedures commonly used in manufacturing.

MFG 240 INTRODUCTION TO QUALITY MANAGEMENT (3 CR)

This is a beginning course in the field of quality management. Students will be introduced to history of the field; problem solving strategies; root cause analysis; workflow diagramming; Six Sigma/Lean concepts; and basic statistical process control (SPC) as the concept of systems thinking is explored in practical scenario based projects. The concepts in this class are universal to all industries.

Prerequisites: MAT 131 or higher, ENG 131, and CIS 101

MFG 261 STRENGTH OF MATERIALS FOR MANUFACTURING (3 CR)

This course will build upon previous courses and provide students with a basic working knowledge of stress/strain, tensile strength, yield strength and some basic finite element analysis (FEA). Students will use standard and custom elements to calculate load capabilities for bolts, pins, axles, and structural material. Some analysis will be computer based as well as standard engineering analysis.

Prerequisites: MFG 105, MFG 160, and CAD 151

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Medical Insurance Coder/ Biller (MIC)

MIC 101 ICD-CM CODING (3 CR)

This course is an introduction to basic coding principles utilizing the International Classification of Diseases, Clinical Modification Coding System, with an emphasis on ICD-CM conventions, coding steps and guidelines, V and E codes, symptoms, signs, and ill-defined conditions and use of the medical record as a source for coding. The Uniform Hospital Discharge Data Set (UHDDS) and guidelines for coding neoplasms, injuries, burns, poisonings, adverse effects of drugs, and complications of surgery and medical care are also included.

Prerequisites: BIO 132 or BIO 254 or MOA 141 or LPN 141 and MOA 112, MOA 120, MOA 241, and HOC 132 or NUR 121

MIC 150 CPT CODING (3 CR)

This course provides an introduction to the study of Current Procedure Terminology (CPT) Coding. Simulation of outpatient coding, including ambulatory surgery, diagnostic testing and procedures, physician services using patient records, and encoder software are essential parts of this course. Emphasis is placed on the use of official CPT coding guidelines, compliance and Ambulatory Payment Classification (APC) calculations.

Prerequisites: BIO 132 or BIO 254 or MOA 141 or LPN 141 and MOA 112, MOA 120, MOA 241, and HOC 132 or NUR 121

MIC 201 BILLING SYSTEMS (3 CR)

This course provides an introduction to the study of the billing and reimbursement processes of hospitals and ambulatory health care settings including: scheduling, registration, insurance verification, fee schedules, encounter forms, charge capturing, billing process, reimbursement process, patient payment and collections. Computer laboratory work with billing software is included.

Prerequisites: CIS 101, MIC 101, MIC 150, and MOA 242

MIC 211 ADVANCED CODING (3 CR)

This course serves as a continuation of basic ICD-CM Coding with application of guidelines in more advanced case scenarios. The content includes simulation of inpatient and outpatient coding of diseases, procedures and services of all body systems using patient records and encoder software. Emphasis is placed on the use of official coding guidelines and compliance.

Prerequisites: MIC 101 and MIC 150 and MOA 242 and HOC 132 or NUR 121.

MIC 250 CODER/BILLER PRACTICUM (3 CR)

A supervised learning experience of the health care field and health care records with emphasis on functions of the health information department, using EHR system, processing the content and analysis of health records at affiliated facilities, designed to give students a clinical education experience in health care setting for a minimum of 150 hours.

Prerequisites: MIC 201, MIC 211 and Instructor Permission Required

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Medical Assistant (MOA)

MOA 112 MEDICAL LAW AND ETHICS (3 CR)

Principles and concepts of medical law and bioethics, as well as an overview of health care financing through third party payers, are the main focus of this course. Topics include: medical practice management, medical law, liability and malpractice prevention, health information management, HIPAA and confidentiality of patient information, employment practices, consent, billing collections, insurance and government healthcare programs, codes of ethics and contemporary bioethical issues.

Prerequisites: CIS 095* and ENG 090*

MOA 114 INTRODUCTION TO CLINICAL PROCEDURES (3 CR)

In this course, through two hours of lecture and three hours of lab per week, students will be given an introduction to the medical assistant profession, learn aseptic techniques, receive OSHA & Blood Borne Pathogen Training, and become familiar with proper documentation and the Electronic Health Record. This course will also begin teaching students how to conduct patient interviews, take a patient history, perform vitals, and perform inventory and equipment maintenance.

Prerequisites: CIS 101, ENG 131, MAT 033* or higher, MOA 112, MOA 120 and, MOA 141 or LPN 141 or BIO 132 or BIO 254

MOA 116 PHYSICAL EXAMS & DIAGNOSTIC TESTING (3 CR)

Through two hours of lecture and three hours of lab per week students will learn clinical practices that will include: assisting patients with special needs, assisting with the physical exam, eye and ear procedures, EKG, pulmonary testing, FOBT/Colonoscopy, diagnostic imaging, patient education and community resources.

Prerequisites: CIS 101, ENG 131, MAT 033* or higher, MOA 112, MOA 120, MOA 145 and MOA 141 or LPN 141 or BIO 132 or BIO 254

MOA 120 MEDICAL TERMINOLOGY (3 CR)

A programmed learning word building system approach is used to teach basic medical terminology word roots, prefixes, suffixes, language origins, plural formation and grammar rules. Emphasis is placed on word building, definitions, spelling, usage, pronunciation and acceptable medical abbreviations.

Prerequisite: ENG 085*

MOA 141 BODY STRUCTURE & FUNCTION (4 CR)

(Same as LPN 141)

This course is a body systems approach to the body structures and functions providing a foundation of understanding normal and abnormal body functions and disease processes.

Prerequisite: ENG 085*

MOA 145 NORMAL/THERAPEUTIC NUTRITION (3 CR)

(Same as LPN 145 and NUR 207)

Basic nutritional concepts are presented with emphasis on application to patient care. Selected nutritional disorders and fundamentals of diet therapy are also included.

Prerequisite: ENG 085*

MOA 214 SPECIALTY EXAMS AND TREATMENTS (3 CR)

Through two hours of lecture and three hours of lab per week, the student will learn clinical practices, procedures and routines including: well child examinations and immunizations, obstetrics/gynecology, male health, geriatrics, orthopedics and administration of medications.

Prerequisites: MOA 114, MOA 116 and HOC 132 LPN 132 or NUR 121

MOA 216 SURGICAL PROCEDURES AND LAB TESTING (3 CR)

Through two hours of lecture and three hours of lab students will learn and become competent in minor office surgery and surgical asepsis, CLIA laws, lab specimen collection and medical lab testing, microscopy, phlebotomy and professional and personal emergency preparedness.

Prerequisites: MOA 114 and MOA 116

MOA 240 MEDICAL OFFICE PROCEDURES (3 CR)

Through written and computerized medical office simulations the student will learn basic concepts and medical administrative practices. Topics include: medical office health information management, oral and written communication skills, patient account management, bookkeeping and accounting practices, electronic transmission of data, preparation of correspondence, understanding document content and use, reception and telephone etiquette, appointment scheduling and legal issues

Prerequisites: CIS 101, ENG 131, MOA 112 and MOA 120

MOA 241 PRINCIPLES OF MEDICAL CODING AND BILLING (3 CR)

Study principles and practices in health information management as it relates to documentation for medical billing. Introduction to ICD and CPT coding, private insurance, and government program claim processing, legal and healthcare finance issues, HIPAA and release of information guidelines are emphasized.

Prerequisites: ENG 131, CIS 101 or CIS 201, MOA 112, MOA 120 and MOA 141 or LPN 141 or BIO 132 or BIO 254

MOA 242 ADVANCED MEDICAL BILLING (3 CR)

Designed to teach advanced skills in medical insurance billing. Correct preparation of major carrier claims including use of modifiers and rebilling skills emphasized.

Prerequisites: ACC 216 or ACC 231 and MOA 241

MOA 251 MEDICAL ASSISTANT CAPSTONE (3 CR)

This capstone medical assistant course will assist the graduate in preparation to sit for the national certification exam. Students will also compile a program portfolio along with creating an e-Portfolio to prepare for securing a position in the field. Successful completion of this course is required for graduation.

Prerequisite: MOA 216

MOA 252 MEDICAL ASSISTANT CLINICAL PRACTICUM (3 CR)

This clinical practicum provides an opportunity for a non-paid practical experience working in a qualified licensed health care practitioner's office or clinic. The student will perform both clinical and administrative medical assisting while being supervised and evaluated by the office staff and monitored by the instructor. The student will also complete assignments via the virtual classroom.

Prerequisite: Instructor Permission Required

* You may meet this prerequisite based on your course placement, ACT score or successful college coursework. Visit www.jccmi.edu for current assessment options and requirements.

Military Science (MSL)

MSL 101 FOUNDATIONS OF OFFICERSHIP (2 CR)

This course introduces students to issues and competencies that are central to a commissioned officer's responsibilities. Establishes framework for understanding officership, leadership and Army values. Includes life skills such as physical fitness training and time management.

MSL 102 BASIC LEADERSHIP (2 CR)

This course establishes a foundation of basic leadership fundamentals such as problem solving, communications, briefing, effective writing, goal setting, techniques for improving listening and speaking skills, and introduction to counseling, additional physical fitness training and time management training.

Prerequisite: MSL 101

MSL 201 INDIVIDUAL LEADERSHIP STUDIES (2 CR)

Students identify successful leadership characteristics through observation of others and self through experiential learning exercises. Students record observed traits (good and bad) in a dimensional leadership journal and discuss observations in small group settings, additional physical fitness training and additional time management training.

Prerequisite: MSL 102

MSL 202 LEADERSHIP AND TEAMWORK (2 CR)

Students examine how to build successful teams, various methods for influencing action, effective communication in setting and achieving goals, the importance of timing the decision, creativity in the problem solving process and obtaining team buy-in through immediate feedback and additional physical fitness training.

Prerequisite: MSL 201

Music (MUS)

MUS 103 KEYBOARD I (2 CR)

Sequence of courses that teach music reading and performance on piano. The course stresses functional keyboard skills.

MUS 104 KEYBOARD II (2 CR)

Sequence of courses that teach music reading and performance on piano. The course stresses functional keyboard skills.

Prerequisite: MUS 103

MUS 105 KEYBOARD III (2 CR)

Sequence of courses that teach music reading and performance on piano. The course stresses functional keyboard skills.

Prerequisite: MUS 104

MUS 106 KEYBOARD IV (2 CR)

Sequence of courses that teach music reading and performance on piano. The course stresses functional keyboard skills.

Prerequisite: MUS 105

MUS 107 GUITAR I (2 CR)

Beginner class instruction in playing folk and classical guitar. Each student provides own guitar.

MUS 108 GUITAR II (2 CR)

Continuation of MUS 107.

Prerequisite: MUS 107

MUS 123 VOICE CLASS (2 CR)

Designed to aid in vocal techniques and develop stage presence. Topics include breathing techniques, vocal evaluation, developing a personal style and working with a microphone. May be taken two times for credit.

MUS 124 ADVANCED VOICE CLASS (2 CR)

Sequence of Voice Class, MUS 123. Class continues the development of vocal technique, with emphasis on performance. May be taken two times for credit.

Prerequisite: MUS 123

MUS 129 COMMUNITY CONCERT BAND (1 CR)

Study and performance of concert band music. May be taken four times for credit.

MUS 130 MUSIC OF NON-WESTERN CULTURES (3 CR)

Discovering the music of non-Western cultures through lecture and directed listening.

*Prerequisite: ENG 085**

MUS 131 UNDERSTANDING MUSIC (3 CR)

Lecture and directed listening on the elements, forms, and historic chronology of Western music.

*Prerequisite: ENG 085**

MUS 132 HISTORY OF AMERICAN POPULAR MUSIC (3 CR)

Students explore the development of popular music in America and focus on the musical, social and economic influences of commercial music in an historical context.

MUS 133 MUSIC EDUCATION (3 CR)

Elementary education student is taught the fundamentals of music and then given practical experience in teaching, creating and accompanying songs and how to enhance an elementary classroom with music.

MUS 135 AFRICAN DRUM ENSEMBLE (2 CR)

Performance of African (Ashante) drums. Rehearsals with cultural exploration leading to performances of the music. May be taken four times for credit.

MUS 136 BRASS ENSEMBLE (2 CR)

Performance of music for brass chamber ensembles. May be taken four times for credit.

MUS 137 JAZZ ENSEMBLE (2 CR)

Performance of jazz with emphasis on improvisational skill development. May be taken four times for credit.

MUS 138 WOODWIND ENSEMBLE (2 CR)

Performance of woodwind chamber ensemble music. May be taken four times for credit.

MUS 151 MUSIC THEORY I (4 CR)

Study of scales, key signatures, chord structure, intervals, chord progression and non-harmonic tones. This course includes sight singing, keyboard harmony and ear training.

MUS 152 MUSIC THEORY II (4 CR)

Continued study of scales, key signatures, chord structure, intervals, chord progression and nonharmonic tones. This course includes sight singing, keyboard harmony and ear training.

Prerequisite: MUS 151

MUS 167 APPLIED MUSIC (1 CR)

Private instrument lessons are open to all students at the start of the semester. Students contact the music department which assists in locating a private instructor. Students pay for both lessons and college credit.

MUS 168 APPLIED MUSIC (1 CR)

Private instrument lessons are open to all students at the start of the semester. Students contact the music department which assists in locating a private instructor. Students pay for both lessons and college credit.

Prerequisite: MUS 167

MUS 177 APPLIED MUSIC (2 CR)

Private instrument lessons are open to all students at the start of the semester. Students contact the music department which assists in locating a private instructor. Students pay for both lessons and college credit.

Prerequisite: MUS 168

MUS 178 APPLIED MUSIC (2 CR)

Private instrument lessons are open to all students at the start of the semester. Students contact the music department which assists in locating a private instructor. Students pay for both lessons and college credit.

Prerequisite: MUS 177

MUS 190 BROADWAY REVUE (1 CR)

Study and perform Broadway, jazz and popular vocal literature. The performance aspect includes singing, stage presence, staging and movement. This ensemble rehearses a total of three to four hours per week. Audition is required. May be taken four times for credit.

MUS 267 APPLIED MUSIC (1 CR)

Private study on all instruments is open to all students. This is a requirement for music majors pursuing a bachelor's degree. All students must register with music department at the beginning of each semester. Recital and jury required.

Prerequisite: MUS 168 or MUS 178

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Natural Science (NSC)

NSC 131 CONTEMPORARY SCIENCE (4 CR)

An interdisciplinary course that introduces the nature of science as a process. Particular topics from biology, chemistry, physics, geology and astronomy covered with an emphasis on critical thinking and evaluating evidence to examine competing theories. This course is ideal as a first science course for students whose science background is minimal, who are anxious about science, or who have not had a science course for several years. Course includes a laboratory component.

Prerequisites: ENG 090 and MAT 020* or higher*

** You may meet this prerequisite based on your course placement, ACT score or successful college coursework. Visit www.jccmi.edu for current assessment options and requirements.*

Nursing (NUR)

NUR 101 FUNDAMENTALS OF NURSING (6 CR)

Become familiar with the nursing process as it relates to universal self-care requisites. Assistance is provided in acquiring and demonstrating competency in basic nursing skills. Emphasis is placed upon assessing self-care agency and therapeutic self-care demand. That information is then used to devise appropriate nursing diagnosis, to plan, implement and evaluate a plan of care for clients requiring nursing actions to meet their universal self-care demands. Laboratory and clinical experiences are included.

Prerequisite: Admission into the NURS.AAS program

NUR 103 INTRODUCTION TO PROFESSIONAL NURSING (4 CR)

Provides a foundation in the scientific and social dimension of nursing as a discipline and a health profession. Examine the historical development of nursing and its impact on contemporary nursing. Cultural variables and personal values examined by the student. The societal context of nursing is reviewed, providing the student with an appreciation of the health care system, with particular emphasis on legal and ethical frameworks.

Prerequisite: Admission into the NURS.AAS program

NUR 121 PHARMACOLOGY (3 CR)

Students are introduced to basic knowledge and skills needed to safely administer medications to clients with self-care needs. This course includes medication action, use, side effects, nursing implications and client education for major drug groups.

Prerequisites: BIO 132 or BIO 254 or LPN 141 or MOA 141 and MAT 033 or higher (MAT 033 preferred).*

NUR 124 TRANSITIONS BRIDGE & CARE OF THE FAMILY (4 CR)

In this course exploration of the legal and professional scope of practice and the transition into the registered nurse role will be discussed. Concepts of critical thinking, time management, and study skills will be explored. Students will become familiar with the nursing process as it relates to self-care theory and as a framework to develop comprehensive understanding of supportive-educative care of the childbearing client/family according to best evidence-based practices. The focus will be on the physiological aspects of the reproductive process and maternity cycle, including fetal development. Physical assessment and select skills will be reviewed. Laboratory and hospital experiences will be incorporated. Acceptance into the LPN to ADN program required for registration in this course.

Prerequisite: Admission into the TNUR.AAS program

NUR 171 SUPPORTIVE EDUCATIVE NURSING (4 CR)

This course teaches students to apply the nursing process to promote self-care for adults with common, well-defined supportive educative needs. Clinical experience designed to reinforce theory is included.

Prerequisite: Admission into the NURS.AAS or TNUR.AAS program

NUR 172 PATHOPHYSIOLOGY (4 CR)

Study of human diseases and the mechanisms that govern them. Addresses etiology, clinical presentation and appropriate treatment of disease processes and nursing action.

Prerequisite: Admission into the NURS.AAS or TNUR.AAS program or permission of the nursing department.

NUR 176 FAMILY I - MATERNAL NURSING (4 CR)

Maternal nursing is focused on the physiological aspects of the reproductive process and maternity cycle, including fetal development. The curriculum utilizes the nursing process as a framework to develop comprehensive understanding of supportive-educative care of the childbearing client/family according to the best evidence-based practices, with attention to leading health indicators identified through national family planning initiatives. This course includes clinical experiences designed to reinforce theory.

Prerequisite: Admission into the NURS.AAS or TNUR.AAS program

NUR 207 NORMAL/THERAPEUTIC NUTRITION (3 CR) (Same as MOA 145 and LPN 145)

Basic nutritional concepts are presented with emphasis on application to patient care. Selected nutritional disorders and fundamentals of diet therapy are also included.

*Prerequisite: ENG 085**

NUR 245 HEALTH ASSESSMENT (3 CR)

NUR 245 provides the beginning nursing student with the necessary skills and knowledge required to perform both a health status and physical assessment of clients ranging from infancy through old age. This course will focus on the assessment of the client in all fields (social, psychosocial, biological, affective, cognitive, physical, developmental, race/ethnicity, cultural and spiritual dynamics of the individual). Students learn to develop foundational concepts of critical thinking skills while distinguishing normal from abnormal findings by performing interactive assessment simulations.

Prerequisite: Admission into the NURS.AAS program

NUR 246 HOLISTIC HEALTH ASSESSMENT (1 CR)

The focus of the course is to expand upon NUR 245 concepts. Students will synthesize the assessment of the individual within the context of the family and the communities within which they live. Emphasis is on the assessment of physical, developmental, psychosocial (cognitive, affective and behavioral), cultural and spiritual dimensions of the client and/or families as well as factors that influence behavioral responses to health and illness across the life span. Attention will be placed on ethical dilemmas that arise during a comprehensive assessment process.

Prerequisite: Admission into the NURS.AAS or TNUR.AAS program

NUR 270 PARTIALLY COMPENSATORY (4 CR)

Students will apply the nursing process to promote self-care for clients with chronic health needs. This course explores the problems of the “partly compensatory” elderly client. Clinical experiences designed to reinforce theory are included in both the hospital and community settings.

Prerequisite: Admission into the NURS.AAS or TNUR.AAS program

NUR 272 MENTAL HEALTH (5 CR)

Explore learning experiences that promote satisfactory assimilation of fundamental mental health and mental illness concepts in their delivery of the nursing process with clients and family systems. A clinical component is provided for students to develop mental health nursing care skills.

Prerequisite: Admission into the NURS.AAS or TNUR.AAS program

NUR 274 LEADERSHIP (4 CR)

The student will examine the role change from student to graduate nurse, the nurse agent’s role in a leadership position, as well as responsibility, accountability and liability in a health care setting, and current health care trends which impact the client’s self care. The student will continue skill development through the clinical experience.

Prerequisite: Admission into the NURS.AAS or TNUR.AAS program

NUR 275 WHOLLY COMPENSATORY CARE OF THE ADULT (4 CR)

Utilize the nursing process to provide “wholly compensatory” care for clients. Caring for clients requiring complex nursing interventions and medical regimens in an acute care clinical setting will be provided.

Prerequisite: Admission into the NURS.AAS or TNUR.AAS program

NUR 276 FAMILY II-NURSING OF CHILDREN (4 CR)

Students build upon previously learned concepts of Orem’s Self-Care Model as it pertains to the role of the maternal child nurse and Family Centered Care (FCC) provider. Students apply concepts of critical thinking to analyze sociocultural factors that influence

growth and development in children. Utilizing the nursing process as a theoretical framework to potentiate wellness within the child at each developmental stage; students explore the value of active partnerships with client/families in promoting health and wellness to both hospitalized and community care recipients. This course includes clinical experiences designed to reinforce theory.

Prerequisite: Admission into the NURS.AAS or TNUR.AAS program

**NUR 277 MENTAL HEALTH NURSING (4 CR)
(Formerly NUR 272)**

Students explore learning experiences that promote satisfactory assimilation of fundamental mental health and mental illness concepts in their delivery of the nursing process with clients and family systems. Learning experiences with a clinical component will be provided for students to demonstrate mental health nursing care to clients with self-care deficits within the wholly and partially compensatory and educative-supportive nursing system.

Corequisite: NUR 2771

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Philosophy (PHL)

PHL 231 INTRODUCTION TO PHILOSOPHY (3 CR)

In this course, you will be exposed to some of the major figures in Western philosophy, and through them, some of the most important philosophical questions. You will discuss questions such as: Is ethics all a matter of opinion? What is the good life for human beings? When is the state justified in using coercive power? What is the nature of knowledge, and how do we get knowledge? What is the nature of reality? Can we prove the existence of God?

Prerequisites: ENG 085 and ENG 090**

PHL 232 LOGIC (3 CR)

This course gives you a background in both informal and formal logic. Informal logic, which is derived from everyday types of discussions and arguments, is dealt with first. Topics included are the nature of arguments in general, statistical arguments and fallacies (bad arguments). Formal logic involves dealing with arguments in an artificial language and is the ancestor of digital computers and every computer programming language. You will learn how to manipulate the artificial language and construct relatively simple proofs.

Prerequisites: ENG 085 and ENG 090**

** You may meet this prerequisite based on your course placement, ACT score or successful college coursework. Visit www.jccmi.edu for current assessment options and requirements.*

PHL 236 ETHICS (3 CR)

In this course, students will examine various questions concerning the status of ethical judgments and become familiar with certain approaches to ethics that have been influential in Western philosophy, including Kantian ethics, utilitarianism and virtue-based ethical theories. In addition, students will consider how these approaches can be employed in ethical decision-making.

Prerequisite: ENG 131

PHL 243 GREAT WORLD RELIGIONS (3 CR)

Students examine the literature and historical settings of great world religions. The relationship of contemporary thought is considered for representative groups.

Prerequisites: ENG 085 and ENG 090**

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Physics (PHY)

PHY 131 CONCEPTUAL PHYSICS (4 CR)

Become familiar with basic concepts used in physics to describe and explain various physical phenomena. The course covers the following topics: kinematics (the description of motion); mechanics (the study of force, momentum, and energy); the behavior of solids, liquids and gases; temperature and heat; waves and sound; electricity and magnetism; and optics. The course is designed to familiarize the student with the basics of physics using a minimum of mathematics. Course includes a laboratory component.

Prerequisites: ENG 085 and MAT 020* or higher*

PHY 150 CONCEPTS IN ASTRONOMY (3 CR)

A one semester conceptual astronomy course for non-science majors. This is a survey course that focuses on four broad content categories: the motions of the sky, the solar system, light & stars, and the universe. The emphasis of the course is on critical thinking about specific topics in these categories with a minimum of mathematics. There is no laboratory component.

Prerequisites: ENG 085 and MAT 033* or higher.*

PHY 151 ASTRONOMY (4 CR)

A one-semester conceptual astronomy course for non-science majors. This is a survey course that focuses on four broad content categories: motions of the sky, the solar system, light and stars, and the universe. The emphasis of the course is on critical thinking about specific topics in these categories. The course has an associated laboratory in which students run experiments to verify the concepts presented. The mathematical skills necessary for this course include working with ratios, rates, scaling, unit conversion, percentages, exponents, graphing, basic geometry and substitution into formulas.

Prerequisites: ENG 085 and MAT 033* or higher*

PHY 231 COLLEGE PHYSICS I (4 CR)

Pre-professional and engineering technology students explore kinematics, mechanics, dynamics, thermodynamics, acoustics and general wave motion. Course includes a laboratory component.

Prerequisite: MAT 131 or higher

PHY 232 COLLEGE PHYSICS II (4 CR)

Students cover topics in electricity, magnetism and modern physics; continuation of PHY 231. Course includes a laboratory component.

Prerequisite: PHY 231

PHY 251 MODERN UNIVERSITY PHYSICS I (5 CR)

Students cover classical mechanics, thermodynamics and wave motion. This course should be elected by all science and engineering students. Course includes a laboratory component.

Prerequisite: MAT 151 or higher

PHY 252 MODERN UNIVERSITY PHYSICS II (5 CR)

Students cover topics in classical electricity and magnetism, optics, special relativity and modern physics. A continuation of PHY 251. Course includes a laboratory component.

Prerequisite: PHY 251

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Political Science (PLS)

PLS 141 AMERICAN NATIONAL GOVERNMENT (3 CR)

Develops a systematic framework for the interpretation of political activity in the United States. Numerous models explain the theoretical foundations of government and the decision-making process.

Prerequisites: ENG 085 and ENG 090**

PLS 262 INTERNATIONAL RELATIONS (3 CR)

Survey contemporary world affairs and examine the nation-state system, the struggle for power, and factors creating harmony and hostility among states.

Prerequisites: ENG 085 and ENG 090**

Process Technology (PTC)

PTC 100 PTEC I-INTRODUCTION TO PROCESS TECHNOLOGY (3 CR)

This course introduces the student to the process technology industry. An overview is provided covering the history of the process industry and the role of the process operator/technician within the industry. Additional topics covered include computer familiarity, application of basic physics and chemistry within the process industries, product chemistry, unit operations, process flows, general safety and environmental responsibilities.

Prerequisites: ENG 085, ENG 090* and MAT 020**

PTC 110 PTEC II-PROCESS TECHNOLOGY EQUIPMENT (3 CR)

This course introduces the student to equipment used in the process technology industry. Topics covered include types of equipment and their application, theory of operation, components, maintenance and troubleshooting, and the health, safety and environmental concerns associated with each.

Prerequisite: PTC 100

PTC 120 PTEC III-PROCESS TECHNOLOGY SYSTEMS (3 CR)

This course introduces the student to systems used in the process technology industry facilities. Topics covered include utility systems, material handling and storage systems, processing systems, and monitoring systems. Discussion of each system will include purpose, equipment, theory of operation, control variables, safety, health and environmental concerns, troubleshooting and optimization.

Prerequisite: PTC 110

PTC 200 PTEC IV-PROCESS TECHNOLOGY OPERATIONS (3 CR)

This course provides an overview of the field of operations within the process industry. Students will use existing knowledge of equipment and systems to understand the operation of an entire unit. Students will study concepts related to commissioning, normal start-up, normal operations, normal shutdown, turnarounds, and abnormal situations, as well as the process technician's role in performing the tasks associated with these concepts within an operating unit.

Prerequisite: PTC 120

PTC 210 PTEC V-SAFETY, HEALTH & ENVIRONMENT (3 CR)

This course provides an overview of the field of safety, health & environment within the process industry. The student will be introduced to various types of plant hazards, safety & environmental systems and equipment, and the regulations under which plants are governed.

Prerequisite: PTC 120

PTC 220 PTEC VI-QUALITY SYSTEMS (3 CR)

This course addresses the field of quality within the process industry. Many process industry related quality concepts will be presented including operating consistency, continuous improvement, plant economics, team skills and statistical process control.

Prerequisite: PTC 120

PTC 230 PTEC VII-INSTRUMENTATION (3 CR)

This course introduces the field of instrumentation and covers process variables and the various instruments used to sense, measure, transmit and control these variables: continuous improvement, plant economics, team skills and statistical process control.

Prerequisite: PTC 120

Psychology (PSY)

PSY 140 INTRODUCTION TO PSYCHOLOGY (4 CR)

Overview of the field of psychology, including learning, development, emotion, motivation, personality, abnormal behavior and psychotherapy.

Prerequisites: ENG 085 and ENG 090**

PSY 140A INTRODUCTION TO PSYCHOLOGY (4 CR) (Same as PSY 140)

Overview of the field of psychology, including learning, development, emotion, motivation, personality, abnormal behavior and psychotherapy.

*Prerequisites: ENG 090**

PSY 144 INTRODUCTION TO PROBABILITY & STATISTICS (4 CR)

(Same as MAT 133 and CIS 203)

This course is an introduction to experimental design, data representation, basic descriptive statistics, probability theorems, frequency distributions and functions, binomial and normal probability distributions and functions, probability density functions, hypothesis testing, statistical inference, Chi-square analysis, linear regression, correlation and application of the above in making informed, data driven decisions in real-world contexts. Both graphing calculators and computer-based statistical software (Microsoft® Excel®) will be used. If the prerequisite is more than two years old, then the mathematics department recommends the course placement exam be taken or the prerequisite be retaken to ensure the success of the student.

Prerequisite: MAT 033 or MAT 131 or higher*

PSY 152 SOCIAL PSYCHOLOGY (3 CR)*(Same as SOC 152)*

Theoretical synthesis of social influences, including attitude formation, social and cognitive development, aggression, prosocial behavior, prejudice, conformity, culture and gender differences, influences, group processes and interpersonal attraction will be studied.

Prerequisite: PSY 140 or SOC 231

PSY 161 INTRODUCTION TO COUNSELING (3 CR)

Learn basic counseling microskills against a backdrop of comparative theories and systems of counseling. Ethical, legal and practical issues included.

Prerequisite: PSY 140

PSY 222 APPLIED BEHAVIOR ANALYSIS (3 CR)

Methods and techniques for changing behaviors based on learning principles. Includes modeling, simulation, role playing, operant, aversion, fear reduction and self-management methods.

Prerequisite: PSY 140

PSY 225 INTRODUCTION TO GROUP THERAPY (3 CR)

This course is designed to expose the student to the principles and concepts associated with the conduct of group therapy. The course will be a combination of lecture and application. The course is designed for psychology/social work majors with an interest in clinical application.

Prerequisites: PSY 140 and PSY 161, PSY 251 or PSY 252

PSY 245 INFANCY AND CHILDHOOD (3 CR)

Physical, mental, emotional and social development of the human individual from conception through childhood. Genetic, prenatal and postnatal influences on development are examined. Cognitive and social learning theories are used to integrate research findings.

Prerequisite: PSY 140

PSY 251 ABNORMAL PSYCHOLOGY (3 CR)

Survey of those behaviors that do not fit the norm of society, including causal factors, specific disorders and treatment methods.

Prerequisite: PSY 140

PSY 252 DEVELOPMENTAL PSYCHOLOGY (3 CR)

Principles and theories of human development from conception through adulthood, with applications to foster optimal development. Cognitive, behavioral and social learning theories are used to integrate research findings.

Prerequisite: PSY 140

PSY 256 EDUCATIONAL PSYCHOLOGY (3 CR)

Application of psychological theories to the teaching-learning process. Principles of cognitive and social development discussed along with discipline, motivation and assessment and evaluation.

Prerequisites: ENG 085 and ENG 090**

PSY 290 HUMAN SEXUALITY (3 CR)

Physiological, psychological and sociocultural influences on human sexuality, including gender, sexual maturation and behavior, identity, values, orientation, relationships, sexually transmitted diseases, sexual disorders and therapy.

Prerequisite: PSY 140

PSY 344 ORGANIZATIONAL PSYCHOLOGY (3 CR)

Performance management and organizational change techniques based on principles of behavioral psychology. Environmental change strategies are emphasized. Topics include personnel management, employee motivation, job satisfaction, compensation strategies and practices, employee behavior and leadership.

Prerequisite: ENG 131 and PSY 140

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Radiography (RAD)

RAD 120 RADIOLOGIC ORIENTATION (2 CR)

This course orientates students to the field of radiography. Students are prepared to enter the hospital setting. Hospital personnel, departments, history, and means of operation are discussed. The moral, legal, and professional rights and responsibilities of a radiographer are a focus.

RAD 121 RADIOGRAPHIC POSITIONING I (4 CR)

Students learn to formulate and apply a working knowledge of radiographic positioning and human anatomy. The student will learn to select and employ the correct procedure process during a radiographic examination and prepare to implement this knowledge in a clinical setting. The course covers anatomy and positioning of the chest, upper airway, abdomen, upper & lower extremity. Students will actively practice in a lab setting with a lab instructor.

RAD 125 RADIOGRAPHIC POSITIONING II (4 CR)

Students will continue to formulate and apply a working knowledge of radiographic positioning and human anatomy. The students will learn to select and employ the correct procedure process during a radiographic examination and prepare to implement this knowledge in a clinical setting. This course will cover the bony thorax, spine, head, gastrointestinal tract, as well as urinary imaging.

Prerequisite: RAD 121

RAD 126 CLINICAL PRACTICUM I (3 CR)

Clinical experience is provided in this course under the direct supervision of ARRT-registered radiographers. Clinical competencies will be given corresponding to the exams completed in the classroom. Performance standards are used to evaluate the student's progress.

Prerequisite: RAD 121

RAD 160 FUNDAMENTALS OF RADIOLOGIC SCIENCE (4 CR)

This course will teach the student about the physics of radiology. The basic principles of electricity, magnetism and electromagnetic energy will be covered. This knowledge will help to provide an understanding of how a quality diagnostic radiograph is created, while taking into account safe exposure factors for a patient. Students will understand how x-rays are created and how they interact with tissues and matter. A clear understanding of the fundamentals of physics is the starting point for becoming a superior radiologic technologist.

Prerequisite: RAD 126

RAD 161 RADIOGRAPHIC EXPOSURE (4 CR)

This course will study in depth the four radiographic qualities of density, contrast, recorded detail and distortion. Factors that affect the four radiographic qualities will be discussed. Students will learn mathematical formulas that aid them in better understanding these factors. Lab and group performance will be utilized to help students learn and understand the content.

Prerequisite: RAD 126

RAD 162 CLINICAL PRACTICUM II (3 CR)

Continuation of Clinical Practicum I.

Prerequisite: RAD 126

RAD 209 CROSS SECTIONAL IMAGING (3 CR)

This course is designed to prepare imaging students for CT and MRI imaging. Students will learn how to identify and assess cross-sectional images. Expectations of radiologists and physicians will be clearly delineated in the course. Students that complete this course successfully will be better prepared for rotations in CT and/or MRI imaging.

Prerequisite: RAD 125

RAD 211 CLINICAL PRACTICUM III (6 CR)

Continuation of Clinical Practicum II.

Prerequisite: RAD 162

RAD 212 SPECIAL RADIOGRAPHY STUDIES (4 CR)

This course will provide a detailed study of special radiographic procedures. The course will discuss the role of the technologist, equipment required in various procedures, and concerns of the technologist when performing these exams. The course also discusses radiation protection and health physics. This course will provide direction to students for registry preparation.

Prerequisite: RAD 160

RAD 213 RADIOBIOLOGY (2 CR)

Students review the basics of cell biology and study the basic biologic interaction of radiation. That study will include cellular and tissue response to radiation, as well as radiation pathology, the total body radiation response, and the late effects of radiation. It will conclude with a discussion of clinical radiobiology that includes diagnostic radiology, nuclear medicine and therapeutic radiology.

Prerequisite: RAD 211

RAD 214 CLINICAL PRACTICUM IV (5 CR)

Continuation of Clinical Practicum III.

Prerequisite: RAD 211

RAD 218 RADIOGRAPHIC PATHOLOGY (3 CR)

This course will introduce the student radiographer to pathology. Students will learn about how differing pathologies occur and how they present themselves radiographically. The course will also discuss how differing pathologies affect the radiographic procedure itself.

Prerequisite: RAD 213

RAD 219 CLINICAL PRACTICUM V (5 CR)

Continuation of Clinical Practicum IV.

Prerequisite: RAD 214

RAD 220 COMPUTED TOMOGRAPHY FUNDAMENTALS (4 CR)

This course will provide students with a basic understanding of computed tomographic concepts. The areas of concentration include: fundamentals, equipment and instrumentation, data acquisition, image processing and reconstruction, patient safety, image quality, procedures, and cross-sectional anatomy of the head, neck, chest, abdomen and pelvis.

Prerequisite: RAD 219

** You may meet this prerequisite based on your course placement, ACT score or successful college coursework. Visit www.jccmi.edu for current assessment options and requirements.*

RAD 250 CT CLINICAL I (5 CR)

To formulate and apply a working knowledge of CT examinations and patient care at the actual clinical setting. The student will observe, assist, and eventually perform CT examinations at the clinical site. Students work and learn from registered CT technologists. Students will record procedures performed according to the ARRT CT requirements.

Prerequisites: RAD 209 and RAD 220

RAD 252 CT CLINICAL II (5 CR)

To continue to formulate and apply a working knowledge of CT examinations and patient care at the actual clinical setting. The student will perform CT examinations at the clinical site. Students work and learn from registered CT technologists. Students will record procedures performed according to the ARRT CT requirements.

Prerequisite: RAD 250

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Respiratory Care (RES)

RES 100 RESPIRATORY CARE TECHNIQUES I (7 CR)

This classroom and laboratory course is an introduction to the duties and responsibilities of respiratory care practitioners. Topics covered include a review of physical science, cardiopulmonary anatomy and physiology, cardiopulmonary resuscitation, basic nursing skills, medical gas and aerosol administration, employee health and safety, pulmonary medications, and an orientation to clinical sites.

RES 104 CARDIOPULMONARY ASSESSMENT (2 CR)

This course is an introduction to basic physical and laboratory assessment of cardiopulmonary patients. Topics include basic pulmonary function and medical lab values, blood gas analysis, and bedside patient assessment equipment and techniques.

RES 110 RESPIRATORY CARE TECHNIQUES II (5 CR)

This classroom and laboratory course continues the introduction to basic duties of respiratory care practitioners. Emphasis will be placed on patient assessment, basic therapy modalities, airway management, cardiopulmonary diagnostic equipment and techniques and an introduction to continuous mechanical ventilation.

Prerequisites: RES 100 and RES 104

RES 114 CARDIOPULMONARY PATHOPHYSIOLOGY I (2 CR)

The student in this course will be able to describe the etiology, pathophysiology, clinical manifestations, diagnosis and management of a variety of cardiopulmonary diseases and processes. Using a series of case studies, student will continue to develop assessment skills and apply clinical practice guidelines to develop care plans for patients with cardiopulmonary disease.

Prerequisites: RES 100 and RES 104

RES 115 CLINICAL PRACTICE I (5 CR)

This course provides a hospital experience in which previously acquired classroom theory and laboratory skills can be exercised. Skills practiced include those associated with patient respiratory assessment, oxygen therapy, a wide range of bronchopulmonary hygiene therapies, and equipment processing.

Prerequisites: RES 100 and RES 104

RES 120 RESPIRATORY CARE TECHNIQUES III (6 CR)

Mechanical ventilation topics are continued in this classroom and laboratory course. Topics presented include volume pre-set and pressure pre-set ventilator equipment and basic ventilator application and management techniques for adult patients.

Prerequisites: RES 110 and RES 114

RES 124 RESPIRATORY PHARMACOLOGY (2 CR)

This course provides an overview of general pharmacology with an emphasis on drugs used in the critical care management of cardiopulmonary conditions.

Prerequisites: RES 110, RES 114 and RES 115

RES 125 CLINICAL PRACTICE II (2 CR)

This clinical course provides three types of experience for the respiratory therapy student. First, there will be a continuation of basic respiratory care modalities from the previous semester. Second, the diagnostic areas of basic pulmonary function testing, arterial blood gas puncture and analysis, and 12-lead electrocardiography will be introduced. Third, the student will receive an orientation to volume control ventilation in the adult ICU environment. In addition, weekly clinic seminars will be held on campus to facilitate student learning.

Prerequisites: RES 110, RES 114 and RES 115

RES 126 CARDIOPULMONARY PATHOPHYSIOLOGY II (2 CR)

The student in this course will be able to describe the etiology, pathophysiology, clinical manifestations, diagnosis and management of a variety of advanced cardiopulmonary diseases and processes. Using a series of case studies, students will continue to develop assessment skills and apply clinical practice guidelines to develop care plans for patients with cardiopulmonary disease.

Prerequisite: RES 114

RES 203 DIAGNOSTIC THEORY (4 CR)

This course covers pulmonary function testing and blood gas analysis equipment and procedures in the laboratory and clinical settings and includes an emphasis on the interpretation of test results from this equipment. Ventilator graphics, an extension of PFT graphics, and their interpretation will be presented. Additionally, equipment and procedures in common use in the areas of ABG laboratories, cardiopulmonary stress testing, pulmonary rehabilitation, and pulmonary home care will be presented.

Prerequisites: RES 120, RES 125 and RES 126

RES 205 CLINICAL PRACTICE III (5 CR)

This clinical course allows students to assist in the pulmonary management of adults on mechanical ventilation. An integrated approach to patient care will be stressed through accurate patient assessment and application of various equipment and therapies. Students will also function as members of the health care team.

Prerequisites: RES 120, RES 124, RES 125 and RES 126

RES 207 ADVANCED CARDIOPULMONARY ANATOMY & PHYSIOLOGY (3 CR)

This course advances the student's knowledge of cardiopulmonary physiology. The cardiac sections cover gross and histologic cardiovascular anatomy, neural/endocrinological control of cardiac function, hemodynamics, microcirculatory disorders, and a review of common cardiac arrhythmias. The pulmonary section covers bronchopulmonary anatomy, gas diffusion, blood flow, ventilation/perfusion relationships, gas transport, mechanics and control of ventilation, and lung responses to changing environments and conditions.

Prerequisites: RES 120, RES 125 and RES 126

RES 210 PERINATAL & PEDIATRIC RESPIRATORY CARE (3 CR)

This classroom and laboratory course covers topics including fetal growth and development, patient assessment, commonly encountered equipment and the clinical management of common neonatal/pediatric diseases and conditions.

Prerequisites: RES 120 and RES 205

RES 220 RESPIRATORY SEMINAR (2 CR)

This course presents a wide variety of topics for discussion. Included are respiratory care history, management and supervision, trends in allied health, research, job acquisition skills and credentialing exam preparation.

Prerequisite: RES 210

RES 225 CLINICAL PRACTICE IV (5 CR)

This clinical course provides a varied experience for students who are about to graduate. A major emphasis will be in assisting with the pulmonary management of neonatal patients on mechanical ventilation. Other rotations will be in a variety to advanced diagnostic laboratories and alternate site venues where respiratory therapists are employed. In addition, weekly clinic seminars will be held on campus to facilitate student learning.

Prerequisite: RES 210

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Sociology (SOC)

SOC 112 SERVICE EXPLORATION AND SOCIAL ISSUES (1 CR)

Students will learn about the service learning design and prepare for travel during JC's spring break by engaging in local service experiences. Students will develop team-building and communication skills, in addition to first aid response. Students will complete reflective essays related to local community service activities. Fundraising activities will be explored and implemented. A minimum of 16 hours of local service is required.

SOC 117 CRIMINOLOGY (3 CR) (Same as CRJ 117)

Provides an understanding of the cultural nature, origin and development of criminal behavior with attention given to the psychological and sociological factors involved.

Prerequisites: ENG 085 and ENG 090**

SOC 122 SERVICE IN ACTION (2 CR)

Students will travel during JC's spring break to a pre-determined site to perform a minimum of 45 hours of service learning. Students will demonstrate team-building and communication skills. Understanding of cultural and geographic issues will be assessed through reflective writings. Must be enrolled in six credits at the time of the service trip.

Prerequisite: SOC 112

SOC 152 SOCIAL PSYCHOLOGY (3 CR)

(Same as PSY 152)

Theoretical synthesis of social influences, including attitude formation, social and cognitive development, aggression, prosocial behavior, prejudice, conformity, culture and gender differences/influences, group processes and interpersonal attraction.

Prerequisite: PSY 140 or SOC 231

* You may meet this prerequisite based on your course placement, ACT score or successful college coursework. Visit www.jccmi.edu for current assessment options and requirements.

SOC 203 FIELD STUDIES (3 CR)*(Same as CRJ 203)*

Only open to students who have reached sophomore level (26 or more credit hours), a minimum 2.5 GPA and permission of the department. An opportunity for students to work for one semester in a law enforcement agency.

SOC 231 PRINCIPLES OF SOCIOLOGY (3 CR)

The discipline and its contributions to understanding the fundamental processes of social interaction. Includes development of self, socialization process, groups and social structure. Application of sociological principles to our society by examination of relevant research.

Prerequisites: ENG 085 and ENG 090**

SOC 235 MINORITY GROUPS IN AMERICA (3 CR)

Sociology of dominant-minority relations in contemporary American society. Attention to specific ethnic, religious, and racial minorities in terms of prejudice and discrimination.

Prerequisites: ENG 085 and ENG 090**

SOC 236 WOMEN IN A CHANGING SOCIETY (3 CR)*(Same as ENG 236)*

Inquiry into historical and changing roles of women, looking at causes of these changes and their effects on women and society through literature, sociology, biology and history.

Prerequisites: ENG 085 and ENG 131*

SOC 246 MARRIAGE AND FAMILY (3 CR)

The position and significance of marriage and the family in contemporary society are examined. Issues are examined within the larger political, historical and social context, including marriage and family values within diverse ethnic, minority and gender identity groups. SOC 231 recommended before enrolling in this course.

Prerequisites: ENG 085 and ENG 090**

Spanish (SPN)

SPN 131 ELEMENTARY SPANISH I (4 CR)

Introduces and develops the four skills of language learning: listening, speaking, reading and writing, with special emphasis on listening and speaking.

*Prerequisite: ENG 085**

SPN 132 ELEMENTARY SPANISH II (4 CR)

Provides increased practice in the basic language skills: listening, speaking, reading and writing.

Prerequisite: SPN 131

SPN 221 SPANISH COMPOSITION & CONVERSATION I (3 CR)

This course is designed for the student with some prior background in Spanish. It offers additional practice in spoken and written Spanish to improve fluency and flexibility of expression. Students develop greater proficiency in pronunciation, build vocabulary and gain greater control over idiomatic expressions.

Prerequisite: SPN 131 or higher

SPN 222 SPANISH COMPOSITION & CONVERSATION II (3 CR)

This course offers additional practice in spoken and written Spanish to improve fluency and flexibility of expression. Communication skills strengthen while written texts approach norms of native composition. Students develop greater proficiency in pronunciation, build vocabulary and gain greater control over idiomatic expressions.

Prerequisite: SPN 131 or higher

SPN 231 INTERMEDIATE SPANISH I (4 CR)

Improves the basic skills of language learning with emphasis on speaking and writing. Introduces sustained readings in Spanish.

Prerequisite: SPN 132 or higher

SPN 232 INTERMEDIATE SPANISH II (4 CR)

Continues to stress speaking practice and writing improvement. Readings and discussions in Spanish, focusing on contemporary events and Hispanic culture.

Prerequisite: SPN 231

Sustainable Technology And Management (STM)

STM 101 INTRODUCTION TO SUSTAINABILITY (3 CR)

Students will familiarize themselves with the environmental issues facing our community, state, country and planet. This course will provide meaning to the term "sustainability" in order to build skills that will help the leaders of tomorrow protect the Earth's resources and meet the needs of humanity indefinitely. It is an introduction to both the scientific and social sides of the environmental problems the world faces, with a specific aim at establishing a foundation in environmental comprehension and for further learning within the topic of sustainability.

Prerequisites: CIS 095, ENG 085* and ENG 090**

STM 401 SYSTEMS THINKING: TOPICS IN SUSTAINABILITY (3 CR)

In a changing world, systems-thinking is needed to make wise decisions, solve complex problems, and understand your role within the larger context. This course uses topics in sustainability to develop systems thinking skills and to engage with real-world, meaningful issues. Topics include: complex systems theory, energy systems, social systems, ecosystems, and others. Students will research, speak, and write about these topics in depth to explore the complete system, the challenges involved, and the potential solutions that exist.

Prerequisite: STM 101, PHL 232 and MAT 131 or higher*

Theatre (THR)

THR 102 THEATRE ACTIVITIES (1 CR)

Students are actively involved in creating, producing, acting, building, designing and the technical direction of a small studio production. Involvement may include acting or technical production.

THR 116 INTRODUCTION TO THEATRE (3 CR)

Survey of Western theatre and drama. Appreciation of theatre through understanding of historical development and societal function. Theatre architecture, production, costuming and acting styles, and the artists who create them.

*Prerequisite: ENG 085**

THR 131 STAGECRAFT I (3 CR)

Basic theory of set design, including tools, equipment, terminology and construction.

THR 134 STAGECRAFT II (3 CR)

Continuation of Stagecraft I focusing on further developing techniques of stage scenery construction, rigging, scene painting and technical drafting. Process and methods of communicating design ideas through graphic representation are presented.

Prerequisite: THR 131

THR 145 FUNDAMENTALS OF ACTING I (4 CR)

Fundamental theories and methodologies of acting and character development, using theatre games, improvisations and scene work with an emphasis on developing an ensemble.

*Prerequisite: ENG 085**

THR 146 FUNDAMENTALS OF ACTING II (4 CR)

Advanced character work and an opportunity to rehearse and perform a studio theatre production.

Prerequisite: THR 145

THR 151 MAKE-UP FOR STAGE & VIDEO (3 CR)

Students learn the fundamental techniques of design and application of make-up for theatre and video.

THR 201 BACKSTAGE CERTIFICATION (1 CR)

Students receive training in manual and computerized light boards, sound systems, rigging and stage management and become certified on JC equipment. Students crew a production at JC.

THR 216 VOICE FOR THE ACTOR (3 CR)

This course will train the actor in the mechanics of vocal production, in the clarity, expressiveness and emotional context required for communicating the meaning of the spoken and written language and in dialects.

THR 241 LIGHTING FOR STAGE AND VIDEO (3 CR)

Students learn the theoretical and practical aspects of lighting design for theatre, dance and video. Emphasis on design, execution and problem solving.

THR 242 SOUND FOR STAGE AND VIDEO (3 CR)

Students learn the theoretical and practical aspects of creating sound tracks for theatre and video. Topics include recording techniques, multi-track recording and mixing, editing, sound effects and sound reinforcement.

THR 260 INTRODUCTION TO DIRECTING (3 CR)

Fundamentals of play directing. Exploration of text analysis, staging techniques and rehearsal processes. Student-directed scenes analyzed and critiqued. The instructor may allow you to take the prerequisite of THR 145 concurrently.

Prerequisite: THR 145

THR 268 THEATRE PRACTICUM (3 CR)

Practicum for actors, directors, technicians and playwrights. Students will gain practical experience within their field through active participation. Note: May be taken three times for credit (nine total credits may be earned).

Prerequisite: Instructor Permission Required

** You may meet this prerequisite based on your course placement, ACT score or successful college coursework. Visit www.jccmi.edu for current assessment options and requirements.*

Welding Technology (WLD)

WLD 100 FUNDAMENTALS OF WELDING (4 CR)

Fundamentals of oxyacetylene and electric arc processes, history and applications. Includes study of gases, electricity, equipment and safety procedures. Provides laboratory experience welding in flat and horizontal positions.

WLD 110 MIG/TIG WELDING (4 CR)

This is a welding course in GMAW (gas metal arc welding formally known as MIG welding) and GTAW (gas tungsten arc welding formally known as TIG welding) processes and techniques. Topics will include safety, use of equipment, power sources, shielding gases, filler metals, welding techniques, troubleshooting, weld defects and welding in the flat, vertical and horizontal positions.

Prerequisites: ENG 085*, MAT 020* and WLD 100

WLD 115 WELD III - WELDING ALUMINUM AND STAINLESS (4 CR)

Covers theory and fundamental application of welding as required in fabrication of aluminum and stainless steel. Includes the development of basic skills in preparation, cutting and welding of these unique materials. Provides a hands-on experience with the use of GMAW and GTAW on aluminum and stainless steel.

Prerequisite: WLD 110

WLD 220 WELDING CERTIFICATION (4 CR)

This course provides a focus on welding certification component essentials to include real-time test environment and materials that meets the AWS welding standard.

Prerequisites: ENG 090* and WLD 115

Special Options

INDEPENDENT STUDY — VARIABLE CREDIT

In-depth study of topics in any discipline that is of special interest to the student. Topic is selected and detailed in consultation with a faculty member.

SPECIAL TOPICS — VARIABLE CREDIT

Intensive, in-depth investigation of one topic of current interest in any discipline. Different topics are chosen by the department.

WORK EXPERIENCE, INTERNSHIPS, SEMINARS — VARIABLE CREDIT

Learn through meaningful work experience with an approved company in any discipline. The position must be obtained by the student and approved by the department before registration is permitted. Students apply the skills and knowledge gained from course work. A department faculty member supervises.



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Notes

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