

JACKSON COLLEGE CATALOG

2021 - 2022



Jackson
COLLEGE 

www.jccmi.edu

JACKSON COLLEGE PHONE NUMBERS

Admissions	517.796.8425
Advising	517.796.8425
Bookstore	517.796.8440
Career Services Coordinator/Employer Liaison	517.796.8610
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Center for Student Success	517.796.8415
Clyde LeTarte Center, Hillsdale	517.437.3343
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Tutoring (Central Campus)	517.796.8415
Toll Free Number	888.522.7344
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Jackson College is accredited by the Higher Learning Commission (hlcommission.org), a regional accreditation agency recognized by the U.S. Department of Education.

The Higher Learning Commission
 230 South LaSalle Street, Suite 7-500
 Chicago, IL 60604-1411
 (800) 621-7440 • hlcommission.org



Jackson College became a board member in the League for Innovation in the Community College in October 2019.

**TOGETHER WE INSPIRE
 AND TRANSFORM LIVES**

How May We Be of Service to You?

2020 was a year that none of us will soon forget. Many lost their jobs, others lost their life to COVID-19, and still others lost the respect and justice due all human beings. Our planet grew warmer, our economy struggled, and politics divided us. It was not lost on me as to how these experiences harshly affected our Jackson College students, our employees, and our community. As a new president was elected, vaccines became more available, and we began to reconnect once more, I am left knowing that we are forever changed, and the idea of 'normal' is no more.



Perhaps, as a result of what you have experienced, the path that you were once on has been disrupted. Perhaps you have lost so much that it's hard to see a way forward. Perhaps you aren't sure where to begin. Or, perhaps, you are clear-eyed about your future - ready to get into the fight for a better world through leading, teaching, laboring, engaging, nursing, caring, or serving others.

Regardless of what brings you to this moment and this catalog about Jackson College, I thank you for considering that our College and you, can work together to create a new you...a new future...one full of many possibilities. Jackson College is a very special place – one suited for doing just that. Others may say that they exist for students, but at Jackson College, we are driven daily by a total commitment to your success, and our actions prove it.

All of us at Jackson College, from our Board of Trustees, to our faculty, our staff, and our administration, have been working so very hard in this changed reality, to prepare this College -- its facilities, its curriculum, its housing, technologies, its support systems -- all of it, for you. Everyone is welcome here. Regardless of where you have been, the challenges of your life, your past, the color of your skin, the person you love, your ZIP code, what you believe, your gender identity, or how you voted in the last election – you are very welcome here.

Here is a place where all people are valued. Here is a place where there is room for differing opinions, and the space to appreciate and celebrate those differences. Here is a place where we welcome persons beyond our shores. And, here is a place wherein we learn the skills to take out into the world to make it a better place for all. Here is Jackson College.

I do hope you will join us -- I think you will be amazed of the opportunities that await you.

Respectfully,

Daniel J. Phelan
President/CEO



Welcome to 2021!

Total Commitment to Student Success (TCS²) is our “North Star” and the foundation of our work. This never changed for 2020, as we moved our classes, student services, support services and student life activities to a virtual platform. It only changed how we delivered these services and validated Jackson College’s dedication to innovation. In 2021, we will continue to progress and adjust to meet your needs. I encourage and welcome you to explore our web page <https://www.jccmi.edu/>, experience our new high touch virtual services and, when possible, come tour our beautiful campuses in Jackson, Hillsdale and Adrian.

The College offers many services to ensure your success:

- Tutoring at the Center for Student Success <https://www.jccmi.edu/center-for-student-success/tutoring-center/>;
- Academic advising <https://www.jccmi.edu/academics/academic-advising/>;
- Campus View housing and family residences <https://www.jccmi.edu/campus-view-student-housing/>;
- Financial aid counseling and support <https://www.jccmi.edu/financial-aid/>;
- Library <https://www.jccmi.edu/library/>;
- Service learning, internships and career placement <https://www.jccmi.edu/internships/>;
- The Oasis Center <https://www.jccmi.edu/the-oasis-center/> ;
- Dental Clinic <https://www.jccmi.edu/dental-hygiene/dental-hygiene-dental-clinic/> ;
- Health Clinic <https://www.jccmi.edu/health-clinic/> ;
- International Student Institute <https://www.jccmi.edu/international-student-institute/> ; and
- Multicultural Affairs <https://www.jccmi.edu/multicultural-affairs/> .

The academic catalog is a tool to guide you through the exciting process of earning an associate degree or certificate, transferring classes to other institutions, training for a career, or updating your current job skills.

You will find many opportunities to get involved in our College community beyond the classroom. Student clubs and organizations; intramural and varsity sports; student life; and theatre and music performance groups all highlight the rich and diverse opportunities available to JC students.

Thank you for joining us at Jackson College and allowing us to be your partner in this new journey. Have a fantastic year!

Sincerely,

Jeremy Frew
Vice President of Student Services

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Welcome to Jackson College

This is the 2021-2022 Jackson College academic catalog. This catalog contains information on the various academic study programs available at the College. Jackson College offers 65 associate, certificate/diploma and baccalaureate programs, as well as pre-baccalaureate transfer pathways. Programs are arranged into Pathways, designed to create a clear path to an academic degree, certificate, or transfer program.

Program requirements are listed within each area for the many credentials available. Here you may learn about career opportunities and individual course descriptions. This catalog is designed as one source and guide on your academic journey. Please contact Student Services and your student success navigator at your location to review academic programs and requirements in this catalog to ensure you are on the right path.

More information about policies, locations, admissions procedures, resources and more is available on the Jackson College website, 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

All bachelor's degrees will meet the General Education Outcomes (GEO) requirements (see General Education Philosophy on [page 11](#)) as approved by the College Board of Trustees. 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 a navigator 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 Jackson College.
6. Courses identified as remedial or developmental cannot be used as credits toward degrees or certificates. Developmental courses are identified with a three-digit number beginning with a 0, such as 040, 086, 091, 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 the College's workforce training programs (prefixes JTI, PDI).
7. A completed Application for Graduation for the degree submitted by the deadline date to Registration & Records, located in Student Services, Central Campus, or to any Jackson College center. Students have five academic years to apply for graduation from the time they complete their last course. Applications are available at all locations, or the website (www.jccmi.edu/regISTRATION-records/graduation/). Official audits are processed by the Registration & Records 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 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. Multiple degrees may be conferred in the same graduation period.

Associate Degree Options and Requirements

Jackson College 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. A Seminar in Life Pathways (SEM 140) course, a gateway to Jackson College, will be required of all students, with the exception of some second-admit programs.

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 Jackson College 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 Jackson College 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 Jackson College.

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Associate Degrees

All associate degrees will meet the General Education Outcomes (GEO) requirements (see General Education Philosophy on [page 11](#)) as approved by the College Board of Trustees. 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 a student success navigator 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 Jackson College.
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 040, 086, 091, 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 the College's workforce training programs (prefixes JTI, PDI).
7. A completed Application for Graduation for the associate degree must be submitted by the deadline date to Registration & Records, located in Student Services, Central Campus or to any Jackson College center. Students have five academic years to apply for graduation from the time they complete their last course at Jackson College. Applications are available at all locations, or the Jackson College website (www.jccmi.edu/registration-records/graduation/). Official audits are processed by the Registration & Records 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 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 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.

Certificates

Jackson College offers certificates that comprise fewer than 60 credits of course work. They concentrate on specific skills, with fewer general education courses than an associate degree.

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 a student success navigator 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 15 credits earned at Jackson College.
5. 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 040, 086, 091, 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 the College's workforce training programs (prefixes JTI, PDI).
6. A completed Application for Graduation for the certificate submitted by the deadline date to Registration & Records, located in Student Services, Central Campus or to any Jackson College center. Students have five academic years to apply for graduation from the time they completed their last course. Applications are available at all locations, or the website (www.jccmi.edu/regISTRATION-records/graduation). Official audits are processed by the Registration & Records Office.
7. 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.
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 likely to change significantly over time, as determined by appropriate academic departments.
9. A minimum of six additional hours beyond those credits completed for one certificate are required to earn a second certificate.

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

General Education Philosophy

A message to students from Jackson College 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 Jackson College'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 General Education Outcomes (GEO). Each of Jackson College's courses is reviewed and assessment is required to be considered for GEO standards. No course substitutions will be allowed unless considered a higher level of an approved course. These are skills that the Jackson College Board of Trustees has determined students should develop or enhance while enrolled in the College.

THE GENERAL EDUCATION 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, and the principles which govern them.
6. Understand and appreciate aesthetic experience and artistic creativity.
7. Understand and respect the diversity and interdependence of the world's 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 GEO requirements. 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, student success navigators, and the Registration & Records Office. The Board of Trustees supports General Education Outcomes (GEO 1-7) to ensure all students receive a well-rounded general education. GEO substitutions are limited to coursework considered a higher level of the approved courses. Approved GEOs can be found in the Associate in Arts, Associate in Science and Associate in General Studies degree requirements.

Student Assessment at Jackson College

Assessment is a vital part of the academic life at Jackson College. 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 Jackson College 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 General Education Outcomes. Feedback from student performance on the learning objectives provides faculty with an assessment of the teaching and learning that occurs.

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SEM 140 Seminar in Life Pathways

First semester students must also enroll in a first-year course, Seminar in Life Pathways (SEM 140), a gateway course to Jackson College. This course is designed to help all students develop the skills, inner qualities and external behaviors needed to take charge of their academic and career success. Students will be guided through an extensive process of making career choices and selecting an academic program of study at Jackson College and beyond.

With the exception of second-admit programs, SEM 140 is required of all students.

Students enrolled in SEM 140 Seminar in Life Pathways are expected to bring their own laptops or similar devices to every class for their use in the course. For technical specifications and to learn about the possibility of using financial aid to purchase an appropriate device, refer to the Jackson College website at www.jccmi.edu/tbz.

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Academic Skills Requirements

The associate degree requirements at Jackson College include proficiency in the academic skills of reading, writing and mathematics. To ensure the 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 multiple measures (using high school GPA, ACT/SAT scores, prior college coursework, etc.) and/or Jackson College-administered placement assessments. Some programs may require a higher mathematics score. Students with prior successful college coursework may also be exempt. Jackson College accepts recent course placement scores from other Michigan colleges.

Writing: All Jackson College students seeking a degree are required to pass the college-level writing course, ENG 131 Writing Experience I, or demonstrate proficiency in writing. Upon completion of assessment via multiple measures or the Jackson College writing placement assessment, students whose results indicate a need for further development in writing must enroll in ENG 091.

Reading: All Jackson College students seeking a degree are required to demonstrate proficiency in reading. Upon completion of assessment via multiple measures, students whose results indicate a need for further development in reading must enroll in ENG 086.

Mathematics: All Jackson College students seeking a degree are required to pass a mathematics course best suited to their program of study or demonstrate math proficiency. Upon completion of assessment via multiple measures or the Jackson College mathematics placement assessment, students whose results indicate a need for further development in mathematics must enroll in MAT 040, MAT 033, or MAT 039, based on mathematics course required for that pathway.

Guidelines: ENG 080, ENG 085, ENG 086, ENG 090, ENG 091, ENG 101, ENG 102, ENG 109, ENG 110, MAT 019, MAT 020, MAT 030, MAT 031, MAT 033, MAT 039 and MAT 040 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.

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Important Information for Pre-Baccalaureate Students

You may be able to earn as much as half your bachelor's degree program (freshmen and sophomore years) at Jackson College. A bachelor's degree at most four-year colleges and universities requires 124 semester credit hours, and most colleges accept 60-64 credits from Jackson College. 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 before transferring. Jackson College offers a number of pre-baccalaureate transfer programs in areas such as Business, Biology, Communication, Criminal Justice, and Psychology. More information, including detailed transfer guides, can be found on our website: www.jccmi.edu/transfer.

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 through an articulation agreement. Others may accept up to 90 credits earned at the College 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 Jackson College 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 Jackson College 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 Jackson College course (2.0 is the 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 the Jackson College website. General guidelines are available to help students choose courses that transfer to their preferred college. Program guide sheets are available that list Jackson College courses that meet general education and specific program requirements at various senior institutions. Guide sheets are available in Student Services on Central Campus, Jackson College @ LISD TECH, Clyde LeTarte Center, Hillsdale, the W.J. Maher Campus, and on the website, www.jccmi.edu/transfer.

TRANSFER PROCEDURE - A CHECKLIST

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

1. See a student success navigator.
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. Jackson College student success navigators 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 sent to each college or university you plan to attend. Transcripts are only accepted if they are sent directly to the College and have the official seal. Request transcripts from the Registration & Records 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 and 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 Jackson College (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. Jackson College students should check on the availability of preparation coursework at the transfer institution.

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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 Jackson College 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 & Records Office and request the MTA designation on their transcripts.

More information can be found at <http://www.macrao.org/Publications/MTA.asp>

Requirements of the Michigan Transfer 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 (3 credits) is a by-invitation-only English course that may be substituted for ENG 132.

QUANTITATIVE REASONING

(at least 1 course)

Mathematics (MAT) 130, 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, 140*, 141* (NSC 141 can be counted as a lab science if also taken with NSC 141L)

Geography (GEO) 131* (GEO 131 can be counted as a lab science if also taken with GEO 133)

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) 132

History (HIS) 211, 231, 232, 235

Psychology (PSY) 140, 152, 245, 251, 252, 290

Political Science (PLS) 141

Sociology (SOC) 117, 152, 231, 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

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General Education Outcomes (GEO)

GEO 1 - Write clearly, concisely and intelligibly

ENG 131 Writing Experience I

ENG 132 Writing Experience II

ENG 201 Advanced Composition

ENG 232 Technical & Business Writing

GEO 2 - Speak clearly, concisely and intelligibly

COM 231 Communications Fundamentals

COM 240 Interpersonal Communication

COM 250 Intercultural Communication

COM 251 Cultural Communications Immersion

COM 350 Intercultural Communication for Management

GEO 3 - Demonstrate computational skills and mathematical reasoning

MAT 130 Quantitative Reasoning

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

PSY 144 Introduction to Probability & Statistics

GEO 4 - Demonstrate scientific reasoning

** Non lab courses*

AGT 131 Introduction to Plant & Soil Science

AGT 227 Introduction to Animal Science

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	253	Human Anatomy and Physiology I
BIO	254	Anatomy and Physiology II
CEM	131	Fundamentals of Chemistry
CEM	132	Fundamentals of Organic and Biological Chemistry
CEM	141	General Chemistry I
CEM	142	General Chemistry II
GEL	109	Earth Science
GEL	160	Introduction to Geology
GEO	131	Physical Geography*
GEO	133	Physical Geography Lab
NSC	120	Fundamentals of Agricultural Science
NSC	131	Contemporary Science
NSC	140	Contemporary Climate Science*
NSC	141	Scientific Inquiry* (<i>can be a lab science when taken with NSC 141L</i>)
PHY	131	Conceptual Physics
PHY	150	Concepts in Astronomy*
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

GEO 5 - Understand human behavior and social systems, and the principles which govern them.

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	US through the Civil War
HIS	232	US from the Civil War
HIS	235	20th Century History
PLS	141	American National Government
PSY	140	Intro 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

GEO 6 - Understand aesthetic experience and artistic creativity.

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Film in Literature
ENG	242	Sports in Film and Literature
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	249	African-American Literature

ENG	252	Shakespeare
ENG	254	Children's Literature
ENG	255	American Literature – 19th Century
ENG	256	American Literature – 20th Century
ENG	257	World Literature
HUM	131	Cultural Connections
MUS	131	Understanding Music
MUS	132	History of American Popular Music
PHL	231	Introduction to Philosophy
THR	116	Introduction to Theatre

GEO 7 - Understand and respect the diversity and interdependence of the world's peoples and cultures.

ANT	131	Cultural Anthropology
COM	250	Intercultural Communications
COM	251	Cultural Communications Immersion
ENG	242	Sports in Film and Literature
ENG	249	African-American Literature
ENG	254	Children's Literature
ENG	257	World Literature
FRN	131	French I
GEO	132	World Regions
GER	131	German I
HIS	125	African-American History
HIS	211	Minority Groups in America
HUM	131	Cultural Connections
MUS	130	Music of Non-Western Cultures
PHL	243	World Religions
PLS	262	International Relations
PSY	236	Women in Changing Society
SOC	236	Women in Changing Society
SOC	246	Marriage and Family
SPN	131	Spanish I
SPN	132	Elementary Spanish II
SPN	231	Intermediate Spanish I
SPN	232	Intermediate Spanish II
WRL	102	World Languages
WRL	103	World Languages
WRL	104	World Languages
WRL	105	World Languages

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Pathways

At Jackson College, academic areas are organized into six pathways to address a variety of career and training options, as well as those seeking transfer to complete their undergraduate bachelor's degrees. These pathways are:

- Business and Computer Technology
- Health Sciences
- Human Services
- Liberal Arts

- Science, Technology, Engineering and Mathematics
- Professional Trades/Industry 4.0 and Agriculture

BUSINESS AND COMPUTER TECHNOLOGY PATHWAY

The Business and Computer Technology Pathway includes careers related to all aspects of business and computer technology, including accounting, finance, business administration, marketing, culinary arts, and information processing. These may include digital marketing/social media, entrepreneurship, computer information systems, cyber security, human resources, office administration, and sport management.

DEGREES/CERTIFICATES:

- Accounting
- Administrative Assistant (See Executive Assistant)
- Business Administration
- Business Management
- Cloud Networking
- Cyber Security
- Entrepreneurship
- Esport Management and Game Design
- Executive Assistant
- Microsoft® Office® User Specialist
- Networking Specialist
- Public Administration and Management
- Software Engineering
- Sport Management

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 or university of your choice. The guide sheet identifies Jackson College 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 Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (23-25 credits)

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

Take the following:

ENG 131 Writing Experience I

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

Take the following:

COM 240 Interpersonal Communication

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

Take the following:

MAT 133 Introduction to Probability & Statistics

GEO 4: Demonstrate scientific reasoning (4-5 credits)**

Take the following:

NSC 131 Contemporary Science

GEO 5: Understand human behavior and social systems, and the principles which govern them (3 credits)

Choose one of the following:

ECN 231 Macroeconomics

ECN 232 Microeconomics

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

Take the following:

HUM 131 Cultural Connections

GEO 7: 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

COM 250 Intercultural Communications

HIS 211 Minority Groups in America

PLS 262 International Relations

ACCOUNTING CORE REQUIREMENTS (32-34 credits)

Take the following:

ACC 214 Income Tax Accounting

ACC	231	Principles of Accounting
ACC	232	Principles of Accounting II
ACC	234	Managerial Accounting
ACC	240	Intermediate Accounting
ACC	245	Internship/Externship
ACC	250	Technology for Accounting
BUA	250	Business Law I
CIS	101	Intro to Computer Systems
CIS	121	Microsoft® Excel®

ACCOUNTING ELECTIVES

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

Recommended electives: BUA 111, BUA 120, CIS 201, ENG 232, HPF 277, PHL 236

Online note: Some students find online accounting 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, Microsoft Excel and skills with attaching files.

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on pages 16-18.*

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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 Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (23-25 CREDITS)

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

Take the following:

ENG 131 Writing Experience I

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

Take the following:

COM 240 Interpersonal Communication

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

Take the following:

MAT 133 Introduction to Probability & Statistics (Preferred)

MAT 130 Quantitative Reasoning

GEO 4: Demonstrate scientific reasoning (4-5 credits)**

Take the following:

NSC 131 Contemporary Science

GEO 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

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

Take the following:

HUM 131 Cultural Connections

GEO 7: 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

COM 250 Intercultural Communications

HIS 211 Minority Groups in America

PLS 262 International Relations

BUSINESS ADMINISTRATION RELATED REQUIREMENTS (10 CREDITS)

Take the following:

ACC 231 Principles of Accounting I OR

ACC 131 Introductory Accounting for Non-Majors

CIS 101 Introduction to Computer Systems OR

CIS 201 Advanced Information Technologies

ENG 232 Technical & Business Writing

BUSINESS ADMINISTRATION CORE REQUIREMENTS (15 CREDITS)

Take the following:

BUA 190 Strategic Business Management

BUA 220 Principles of Management

BUA 230 Principles of Marketing

BUA 245 Internship

BUA 250 Business Law I

BUSINESS ADMINISTRATION ELECTIVES (10-12 CREDITS)

Student should select 10-12 credit hours from any of the following areas of study to meet the 60-credit hour degree requirement:

Accounting (ACC), Business (BUA), Economics (ECN), Entrepreneurship (ENT), First Year Seminar (FYS or SEM), Public Administration and Management (PAM), and PSY 140

Work with your student success navigator to make the best choices based on your career and transfer goals.

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on pages 16-18.*

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Business Administration – Associate in Arts (BUAD.AA)

This degree is designed for students who plan to transfer to a four-year college or university to pursue a bachelor's in business administration degree. Courses provide the foundation for transfer and admission into most four-year schools' College of Business, as well as the skills necessary for success in the business world.

Minimum credits: 62

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (36 CREDITS)

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

Take the following:

ENG 131 Writing Experience I

Choose one of the following:

ENG 132 Writing Experience II

ENG 201 Advanced Composition

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

Choose one of the following:

COM 231 Communications Fundamentals

COM 240 Interpersonal Communication

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

Take the following:

MAT 133 Introduction to Probability and Statistics

GEO 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:

Non-laboratory Science Courses:

BIO 140 Public Health and Disease

GEO 131 Physical Geography

NSC 140 Contemporary Climate Science

PHY 150 Concepts in Astronomy

Lab Science Courses:

BIO 110 Introductory Biology

BIO 132 Human Biology

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
NSC	141	Scientific Inquiry (<i>must be taken with NSC 141L</i>)
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

GEO 5: Understand human behavior and social systems, and the principles which govern them (6 credits)

Take the following:

ECN	231	Macroeconomics
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Choose one of the following:

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

GEO 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	242	Sports in Film & Literature
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	249	African-American Literature
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

GEO 7: 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	242	Sports in Literature and Film
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
HIS	211	Minority Groups in America
HUM	131	Cultural Connections
MUS	130	Music of Non-Western Cultures
PHL	243	World Religions
PLS	262	International Relations
SOC	236	Women in Changing Society
SPN	131	Spanish I or higher

FIRST YEAR EXPERIENCE (2 credits)

Choose one of following:

FYS	110	LifeMaps
FYS	131	Navigating College and Life
SEM	140	Seminar in Life Pathways

PRE-BUSINESS CORE REQUIREMENTS (20 credits)

Take the following:

ACC	231	Principles of Accounting I
ACC	232	Principles of Accounting II
BUA	190	Strategic Business Management
BUA	250	Business Law
CIS	101	Introduction to Computer Systems
ECN	232	Microeconomics

TRANSFER ELECTIVES (4 credits)

Select additional courses based on transfer institution and program so that degree totals 60 credit hours.

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Business Management – Certificate (BMGT.CERT)

The Business Management Certificate will develop your awareness and hone your skills in many of the functional aspects of the business world. People with business and management skills are employed in every industry in the career world. Therefore, the focus of this program is on the principles, theories and application of today's business while also concentrating on the legal, management, and human resource components found in today's dynamic, diverse, and global organization. Jobs may be found in insurance companies, health care facilities, educational institutions, transportation/distribution centers,

government agencies, and manufacturing firms in a variety of departments. This certificate may also be used to further a personal business endeavor. This program also consists of foundational courses needed for a Business Administration Associate degree.

Minimum credits: 19

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

BUSINESS MANAGEMENT CORE REQUIREMENTS (19 CREDITS)

Take the following:

ACC	231	Principles of Accounting I
BUA	100	Contemporary Business
BUA	220	Principles of Management
BUA	221	Human Resource Management
BUA	250	Business Law I
CIS	101	Intro to Computer Systems

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Cloud Networking – Associate in Applied Science (CLNE.AAS)

The addition of “Cloud” computing, virtualization and the need to store and manage the explosion of “big data” requires network administrators to have a new set of skills beyond those needed just a few years ago. This program will provide the concepts and practical hands-on training to be successful in this new arena.

Minimum credits: 65

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (23-25 CREDITS)

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

Take the following:

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

Take the following:

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

Take the following:

MAT	133	Introduction to Probability and Statistics (or higher)
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GEO 4: Demonstrate scientific reasoning (4-5 credits)**

Choose one of the following:

NSC	131	Contemporary Science
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GEO 5: Understand human behavior and social systems, and the principles which govern them (3-4 credits)**

Choose one of the following:

ECN 231 Macroeconomics
ECN 232 Microeconomics

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

Choose one of the following:

HUM 131 Cultural Connections

GEO 7: 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
COM 250 Intercultural Communications
HIS 211 Minority Groups in America
PLS 262 International Relations

NETWORKING SPECIALIST CORE REQUIREMENTS (27 CREDITS)

Take the following:

CNS 101 Network Fundamentals/Network+
CNS 106 Computer Networking II
CNS 107 Computer Networking III
CNS 121 Microsoft® Networking Client I
CNS 123 Microsoft® Networking Server I
CNS 131 Linux Administration I
CNS 141 Wireless Networking
CNS 201 Network Security/Security+

CLOUD NETWORKING REQUIREMENTS (15 CREDITS)

Take the following:

CNS 245 Internship
CNS 251 Cloud Computing
CNS 252 Virtualization I
CNS 253 Virtualization II
CNS 254 Information Storage and Management

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on pages 16-18.*

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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: 16
Minimum cumulative GPA: 2.0
Minimum grade in all courses: 2.0
Minimum Jackson College credits: 15

COMPUTER SUPPORT SPECIALIST CORE REQUIREMENTS (16 CREDITS)

Take the following:

CIS	174	PC Repair/A+ Hardware Component
CIS	175	PC Repair/A+ Software Component
CNS	101	Networking Fundamentals/Network +
CNS	131	Linux Administration
CNS	201	Network Security/Security+

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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 stay safe from cyber-attacks. Their responsibilities are continuously expanding as our society and economy rely 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: 65
Minimum cumulative GPA: 2.0
Minimum grade in all courses: 2.0
Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (23-25 CREDITS)

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

Take the following:

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

Take the following:

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

Take the following:

MAT	133	Introduction to Probability & Statistics (or higher)
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GEO 4: Demonstrate scientific reasoning (4-5 credits)**

Choose one of the following:

BIO	110	Introductory Biology
CEM	131	Fundamentals of Chemistry
GEL	109	Earth Science

NSC	131	Contemporary Science
PHY	131	Conceptual Physics

GEO 5: Understand human behavior and social systems, and the principles which govern them (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

GEO 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
HUM	131	Cultural Connections
MUS	131	Understanding Music

GEO 7: 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
COM	250	Intercultural Communications
HIS	211	Minority Groups in America
PLS	262	International Relations

NETWORKING SPECIALIST CORE REQUIREMENTS (27 CREDITS)

Take the following:

CNS	101	Network Fundamentals/Network+
CNS	106	Computer Networking II
CNS	107	Computer Networking III
CNS	121	Microsoft® Networking Client I
CNS	123	Microsoft® Networking Server I
CNS	131	Linux Administration I
CNS	141	Wireless Networking
CNS	201	Network Security/Security+

CYBER SECURITY REQUIREMENTS (15 CREDITS)

Take the following:

CNS	210	Python Scripting and Security
CNS	231	Firewalls and Intrusion Detection
CNS	233	Hacker Techniques and Incident Handling
CNS	235	Packet Analysis and Network Forensics
CNS	245	Internship

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on pages **16-18**.*

Digital Marketing – Certificate (DMKT.CERT)

Digital marketers communicate with the public through platforms that promote content engagement and sharing online. They use business acumen, creativity, communication, and technology skills to create digital marketing campaigns. Content is posted – such as images, text, and videos – to spark interest in a topic, build a brand and engage with the target market. Digital marketers may interact with the public in real-time, mediate criticism and share positive engagements. They track the effectiveness of communication strategies by setting digital campaign goals for Internet traffic and then measuring success against those goals.

Minimum credits: 24

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

MARKETING CORE REQUIREMENTS (24 CREDITS)

Take the following:

BUA	100	Contemporary Business
BUA	130	Customer Service
BUA	230	Principles of Marketing
BUA	231	Advertising, Promotion & Public Relations
CIS	126	Digital Design Fundamentals
CIS	133	Brand Identity Design
CIS	135	OS Web Design
CIS	138	Image Editing Applications
ECM	201	Advanced Information Technology
ECM	220	eBusiness: SEO / Management / Measurement

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 Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (23-25 CREDITS)

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

Take the following:

ENG 131 Writing Experience I

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

Take the following:

COM 240 Interpersonal Communication

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

Take the following:

MAT 133 Introduction to Probability & Statistics

GEO 4: Demonstrate scientific reasoning (4-5 credits)**

Take the following:

NSC 131 Contemporary Science

GEO 5: Understand human behavior and social systems, and the principles which govern them (3 credits)

Choose one of the following:

ECN 231 Macroeconomics

ECN 232 Microeconomics

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

Take the following:

HUM 131 Cultural Connections

GEO 7: Understand and respect the diversity and interdependence of the world's people and cultures (3 credits)**

Take the following:

PLS 262 International Relations

ENTREPRENEURSHIP RELATED REQUIREMENTS (17 CREDITS)

Take the following:

ACC 131 Introductory Accounting for Non-Majors OR

ACC 231 Principles of Accounting I

BUA 121 Leadership

BUA 250 Business Law I

CIS 101 Introduction to Computer Systems OR

CIS 201 Advanced Information Technologies

CIS 133 Brand Identity Design

STM 101 Introduction to Sustainability

ENTREPRENEURSHIP CORE REQUIREMENTS (12 CREDITS)

Take the following:

ENT 101 Entrepreneurship: Creating Your Own Job

ENT 102 Entrepreneurial Marketing: Finding Your Niche

ENT 169 Business Plan

ENT 245 Internship

ELECTIVES (8 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.

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on pages 16-18.*

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: 19

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (3 CREDITS)

Take the following:

ENG 131 Writing Experience I

ENTREPRENEURSHIP CORE REQUIREMENTS (16 CREDITS)

Take the following:

ACC 131 Introductory Accounting for Non-Majors

CIS 201 Advanced Information Technologies

ENT 101 Entrepreneurship: Creating Your Own Job

ENT 102 Entrepreneurial Marketing: Finding Your Niche

ENT 169 Business Plan

Esport Game Design – Certificate (ESGD.CERT)

Jackson College Esport Game Design Certificate prepares students for careers in the global business of esports. This program focuses on the creation and design aspect of esports. Students learn 3D modeling, animation, and lighting in video game production. Students are taught the skills necessary to develop and program single and multiplayer video games for gaming consoles, personal computers and networks. Graduates may pursue a variety of careers including programmer, animator, graphic designer, technician, writing, artist and entrepreneur.

Minimum credits: 18

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

ESPORT GAME DESIGN CORE REQUIREMENTS (18 CREDITS)

Take the following:

SMT	110	Esport in Society
SMT	210	Intro to Esport Management
CIS	134	Graphic Imaging
CIS	183	Animation
CIS	272	Game Fundamentals
CIS	274	3D Modeling

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Esport Management – Certificate (ESMG.CERT)

Jackson College Esport Management Certificate prepares students for careers in the global business of esport. This program focuses on the business aspect of esport. Students will learn how to market and promote events. Graduates gain knowledge in planning events, esport culture, brands, fans and gaming industry trends. Graduates may pursue a variety of careers including esport team coach, esport event staff, esport arena staff, esport marketing coordinator, esport business development specialist, and social media specialist.

Minimum credits: 18

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

ESPORT GAME MANAGEMENT REQUIREMENTS (18 CREDITS)

Take the following:

SMT	110	Esport in Society
SMT	210	Intro to Esport Management
SMT	230	Sport Marketing
SMT	240	Sport Facility and Event Management
SMT	245	Internship
BUA	231	Advertising, Promotion, and Public Relations

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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 must possess proven multi-faceted skills so an internship or work experience may enhance one's employability and success.

Minimum credits: 63

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

GENERAL EDUCATION REQUIREMENTS (23-24 CREDITS)

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

Take the following:

ENG 131 Writing Experience I

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

Take the following:

COM 240 Interpersonal Communication

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

Choose one of the following:

MAT 133 Introduction to Probability & Statistics (Preferred)

MAT 130 Quantitative Reasoning

GEO 4: Demonstrate scientific reasoning (4-5 credits)**

Take the following:

NSC 131 Contemporary Science (Preferred)

GEO 5: Understand human behavior and social systems, and the principles which govern them (3 credits)**

Choose one of the following:

ECN 231 Macroeconomics

ECN 232 Microeconomics

PSY 140 Introduction to Psychology

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

Take the following:

HUM 131 Cultural Connections

GEO 7: Understand and respect the diversity and interdependence of the world's peoples and cultures (3 credits)**

Take the following:

COM 250 Intercultural Communications

EXECUTIVE ASSISTANT RELATED REQUIREMENTS (7 CREDITS)

Take the following:

ACC 131 Introductory Accounting for Non-Majors OR

ACC 231 Principles of Accounting I

ENG 232 Technical & Business Writing

EXECUTIVE ASSISTANT CORE REQUIREMENTS (33 CREDITS)

Take the following:

BUA 100 Contemporary Business

BUA 121 Leadership

BUA 130 Customer Service

CIS 104 Keyboard Speed and Accuracy

CIS 117 Microsoft Outlook

CIS	119	Microsoft PowerPoint
CIS	120	Microsoft® Word® Comprehensive
CIS	121	Microsoft® Excel® Comprehensive
CIS	122	Microsoft® Access®
CIS	133	Brand Identity
CIS	135	OS Web Design
CIS	138	Image Editing
CIS	201	Advanced Information Technologies
CIS	210	Office Administration Systems
CIS	245	Internship

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on pages 16-18.*

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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 in the executive assistant program.

Minimum credits: 16

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

MICROSOFT OFFICE SPECIALIST CORE REQUIREMENTS (16 CREDITS)

Take the following:

CIS	104	Keyboard Speed and Accuracy
CIS	117	Microsoft® Outlook® Workshop
CIS	119	Microsoft® PowerPoint®
CIS	120	Microsoft® Word® Comprehensive
CIS	121	Microsoft® Excel® Comprehensive
CIS	122	Microsoft® Access® Comprehensive
CIS	201	Advanced Information Technologies

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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: 65

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (23-25 CREDITS)

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

Take the following:

ENG 131 Writing Experience I

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

Take the following:

COM 240 Interpersonal Communication

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

Take the following:

MAT 133 Introduction to Probability & Statistics (or higher)

GEO 4: Demonstrate scientific reasoning (4-5 credits)**

Choose one of the following:

BIO 110 Introductory Biology

CEM 131 Fundamentals of Chemistry

GEL 109 Earth Science

NSC 131 Contemporary Science

PHY 131 Conceptual Physics

GEO 5: Understand human behavior and social systems, and the principles which govern them (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

GEO 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

HUM 131 Cultural Connections

MUS 131 Understanding Music

GEO 7: 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

COM	250	Intercultural Communications
HIS	211	Minority Groups in America
PLS	262	International Relations

NETWORKING CORE REQUIREMENTS (27 CREDITS)

Take the following:

CNS	101	Network Fundamentals/Network+
CNS	106	Computer Networking II
CNS	107	Computer Networking III
CNS	121	Microsoft® Networking Client I
CNS	123	Microsoft® Networking Server I
CNS	131	Linux Administration I
CNS	141	Wireless Networking
CNS	201	Network Security/Security+

NETWORK ADMINISTRATION REQUIREMENTS (15 CREDITS)

Take the following:

CNS	124	Microsoft® Networking Server IV
CNS	125	Microsoft® Directory Service
CNS	128	PowerShell Scripting for Network Administrators
CNS	235	Packet Analysis and Network Forensics
CNS	245	Internship

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on [pages 16-18](#).*

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: 27

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

NETWORKING SPECIALIST CORE REQUIREMENTS (27 CREDITS)

Take the following:

CNS	101	Network Fundamentals/Network+
CNS	106	Computer Networking II

CNS	107	Computer Networking III
CNS	121	Microsoft® Networking Client I
CNS	123	Microsoft® Networking Server I
CNS	131	Linux Administration I
CNS	141	Wireless Networking
CNS	201	Network Security/Security+

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Public Administration and Management - Associate in Arts (PAMT.AA)

Public administration and management degrees provide the highest quality for undergraduate education for students interested in working in the public and private sectors and non-profit organizations. Public administration and management programs strive to achieve local, state, and national prominence through the contemporary curriculum, innovative instruction, scholarly and applied research, and community service. This program and services develop and enhance management skills essential to public and nonprofit organizations' orientation towards evolving communities. The public administration and management program offer an opportunity to earn an Associate of Arts degree and transfer to a four-year university program of public administration. The public administration and management program provide many opportunities for students to prepare for entry-level employment as public administrators and produces graduates with the public management skills and analytical techniques needed for successful careers in government, nonprofit, and other business-related fields.

Minimum credits: 60

Minimum grade in all courses: 2.0

Minimum cumulative GPA: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (35-38 CREDITS)

GEO 1: Write clearly, concisely and intelligibly (6 CREDITS)

Take the following:

ENG 131 Writing Experience I

Choose one of the following:

ENG 132 Writing Experience II

ENG 201 Advanced Composition

GEO 2: Speak clearly, concisely and intelligibly (3 CREDITS)

Choose one of the following:

COM 231 Communications Fundamentals

COM 240 Interpersonal Communication

GEO 3: Demonstrate computational skills and mathematical reasoning (4 CREDITS)

Take the following:

MAT 133 Introduction to Probability and Statistics or higher

GEO 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:

Non-laboratory Science Courses:

BIO	140	Public Health and Disease
PHY	150	Concepts in Astronomy
GEO	131	Physical Geography
NSC	140	Contemporary Climate Science
NSC	141	Scientific Inquiry (can be counted as a lab science if taken with NSC 141L)

Lab Science Courses:

BIO	110	Introductory Biology
BIO	132	Human Biology
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
NSC	131	Contemporary Science
NSC	141	Scientific Inquiry (<i>must be taken with NSC 141L</i>)
PHY	131	Conceptual Physics
PHY	151	Astronomy
PHY	231	College Physics I
PHY	251	Modern University Physics I

GEO 5: Understand human behavior and social systems, and the principles which govern them (6 CREDITS)

Choose one of the following:

ECN	231	Macroeconomics
ECN	232	Microeconomics

Choose one of the following:

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

GEO 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	242	Sports in Film & Literature
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	249	African-American Literature
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

GEO 7: 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	242	Sports in Literature and Film
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
HIS	211	Minority Groups in America
HUM	131	Cultural Connections
MUS	130	Music of Non-Western Cultures
PHL	243	World Religions
PLS	262	International Relations
SOC	236	Women in Changing Society
SPN	131	Spanish I or higher

RELATED REQUIREMENTS (13 CREDITS)

Take the following:

BUA	220	Principles of Management
BUA	230	Principles of Marketing
BUA	250	Business Law I
ACC	231	Principles of Accounting

PUBLIC ADMINISTRATION AND MANAGEMENT CORE REQUIREMENTS (12 CREDITS)

Take the following:

PAM	190	Introduction to Public Administration
PAM	220	Nonprofit Leadership and Budgeting

PAM	230	Human Resources in Public Sector
PAM	240	Public Policy Making & Analysis

Public Administration and Management – Certificate (PAMT.CERT)

Completion of certificate program in Public Administration certificate program is designed to meet the needs of employees of government or non-profit agencies and those desiring employment or advancement. The program covers the history, present, and future of public administration. Courses include topics on public policy, finance, human resources, organizational behavior, and government.

Minimum credits: 24

Minimum grade in all courses: 2.0

Minimum cumulative GPA: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (6 CREDITS)

Take the following:

ENG 131 Writing Experience

Choose one of the following:

COM 231 Communications Fundamentals

COM 240 Interpersonal Communication

RELATED REQUIREMENTS (6 CREDITS)

Take the following:

BUA 220 Principles of Management

BUA 230 Principles of Marketing

PUBLIC ADMINISTRATION AND MANAGEMENT CORE REQUIREMENTS (12 CREDITS)

Take the following:

PAM 190 Introduction to Public Administration

PAM 220 Nonprofit Leadership and Budgeting

PAM 230 Human Resources in Public Sector

PAM 240 Public Policy Making & Analysis

Software Engineering – Associate in Applied Science (SOEN.AAS)

Software engineering is the process of analyzing user needs to design, develop, test, deploy, and manage software applications systems. Software applications systems connect you to a computer, tablet, smartphone or mobile device. Coursework will include studies in databases, cloud computing, systems design, and multiple programming languages to create scalable programs, web applications, and cloud-based software. This degree is for students who want to develop the skills necessary to pursue their career goals or transfer to work toward a bachelor's degree in the field. Job opportunities may include applications developer, computer consultant, information technology analyst, programmer, software developer, or software engineer.

Minimum credits: 60

Minimum cumulative GPA: 2.0
Minimum grade in all courses: 2.0
Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (23-25 CREDITS)

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

Take the following:

ENG 131 Writing Experience I

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

Choose one of the following:

COM 231 Communication Fundamentals

COM 240 Interpersonal Communication

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

Choose one of the following:

MAT 139 College Algebra

GEO 4: Demonstrate scientific reasoning (4-5 credits)**

Choose one of the following:

PHY 131 Conceptual Physics

PHY 231 College Physics I

PHY 251 Modern University Physics I

GEO 5: Understand human behavior and social systems, and the principles which govern them (3 credits)**

Choose one of the following:

ECN 231 Macroeconomics

ECN 232 Microeconomics

PLS 141 American National Government

PSY 140 Introduction to Psychology

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

Choose one of the following:

ART 111 Art History: Prehistory to 1400

ART 112 Art History: Renaissance to Present

HUM 131 Cultural Connections

MUS 131 Understanding Music

GEO 7: 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

COM 250 Intercultural Communications

HIS 211 Minority Groups in America

PLS 262 International Relations

SOFTWARE ENGINEERING RELATED REQUIREMENTS (13 CREDITS)

Take the following:

CNS	101	Network+/Network Fundamentals
CNS	131	Linux Administration
CIS	245	Internship/Externship
CNS	251	Cloud Computing

SOFTWARE ENGINEERING CORE REQUIREMENTS (24 CREDITS)

Take the following:

CIS	146	Web Design & Development
CIS	158	Programming Logic
CIS	165	JAVA Programming
CIS	170	Programming in C++
CIS	220	Database Systems
CIS	244	Web Programming
CIS	265	Android Mobile Development
CIS	273	Systems Concepts & Design

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on pages 16-18.*

Sport Management – Associate in Arts (SMGT.AA)

Jackson College Sport Management program prepares students for careers in the global sport industry. The associate degree curriculum explores the cultural and business impact of sport through hands-on, real-world case studies and internships. This program develops strong skills in critical business areas of sport including management, communication, marketing, accounting, leadership, entrepreneurship, and human resource management.

Upon graduation with an Associate in Art in Sport Management from Jackson College, many of our graduates will transfer to a four-year bachelor's degree granting university to pursue a degree in sport management, business, law, accounting, urban planning, and graduate studies.

Minimum credits: 60

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (36-38 CREDITS)

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

Choose two of the following:

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

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

Choose one of the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

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

Take the following:

MAT 133 Introduction to Probability & Statistics (or higher)

GEO 4: Demonstrate scientific reasoning (7-8 credits)**

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

Non-laboratory science courses:

BIO 140 Public Health and Disease

GEO 131 Physical Geography

Lab science courses:

BIO 132 Human Biology

GEL 109 Earth Science

NSC 131 Contemporary Science

PHY 131 Conceptual Physics

GEO 5: Understand human behavior and social systems, and the principles which govern them (6 credits)**

Choose two of the following from two different disciplines:

HIS 131 Western Civilization to 1555

HIS 132 Western Civilization 1555 to Present

PLS 141 American National Government

PSY 140 Introduction to Psychology

SOC 231 Principles of Sociology

GEO 6: Understand aesthetic experience and artistic creativity (6 credits)**

Choose two of the following from two different disciplines:

ART 111 Art History: Prehistory to 1400

ART 112 Art History: Renaissance to Present

ENG 254 Children's Literature

HUM 131 Cultural Connections

MUS 131 Understanding Music

SPN 131 Spanish I

GEO 7: 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

COM 250 Intercultural Communication

PHL 243 World Religions

PLS 262 International Relations

SPN 131 Spanish I

SPN 132 Spanish II

WRL 104 Mandarin Conversation I

SPORTS MANAGEMENT CORE REQUIREMENTS (15 CREDITS)

Take the following:

SMT	100	Intro to Sport Management
SMT	111	Historical and Sociological Issues in Sport
SMT	230	Sport Marketing
SMT	240	Sport Facility and Event Management
BUA	250	Business Law

SPORTS MANAGEMENT ELECTIVES (Select so degree totals 60 credits)**Choose three of the following:*****Recommended for General Sport Management Focus:***

BUA	231	Advertising, Promotion, and Public Relations
COM	260	Small Group Communication (if not selected in GEO 2)
ACC	231	Principles of Accounting I
CIS	158	Programming Logic
CNS	251	Cloud Computing
HPF	173	Sport Matters

Recommended for Esports focus:

SMT	110	Esport and Society
SMT	210	Intro to Esport Management
SMT	245	Internship

*****We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on pages [16-18](#).***

HEALTH SCIENCES PATHWAY

To meet the ever-expanding demand for qualified health sciences professionals, Jackson College's Health Sciences Pathway offers a wide array of associate degree and certificate programs. These programs combine classroom instruction, laboratory experience and clinical practice to assure that students obtain the most current and the highest-level skills in their chosen health profession. Students interested in health sciences programs may obtain admission requirement information from their student success navigator. If additional information is desired, contact the director for the program of interest.

Students in the Health Sciences Pathway that require clinical rotations at health care facilities may be required to submit to a drug test. If the student tests positive for illicit drugs, the student 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 (Second Admit Program)
- Dental Hygiene (Second Admit Program)
- Emergency Medical Services – EMT Basic and Paramedic
- General Sonography (Second Admit Program)
- Medical Assistant
- Medical Insurance Coder/Biller
- Medical Office Support

- Nursing, ADN (RN) (Second Admit Program)
- Nursing, LPN to RN (Second Admit Program)
- Nursing, Practical (LPN) (Second Admit Program)
- Patient Care Technician
- Radiography (Second Admit Program)
- Respiratory Care (Second Admit Program)
- Vascular Sonography (Second Admit Program)

Allied Health— Associate in Applied Science (ALHE.AAS)

The Associate in Applied Science in Allied Health program is specifically designed for those who have completed a Health Sciences Certificate, courses from Jackson College that lead to a credential, or have earned a third party 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.

Minimum credits: 60

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (24 CREDITS)

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

Take the following:

ENG 131 Writing Experience I

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

Choose one of the following:

COM 231 Communication Fundamentals

COM 240 Interpersonal Communication

COM 250 Intercultural Communication

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

Take the following:

MAT 130 Quantitative Reasoning (or higher)

GEO 4: Demonstrate scientific reasoning (4-8 credits)

Choose one of the following:

BIO 132 Human Biology (Preferred) OR

BIO 253 Human Anatomy and Physiology I AND

BIO 254 Human Anatomy and Physiology II

NSC 131 Contemporary Science

GEO 5: Understand human behavior and social systems, and the principles that govern them (4 credits)

Take the following:

PSY 140 Introduction to Psychology

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

Take the following:

HUM 131 Cultural Connections

GEO 7: Understand and respect the diversity and interdependence of the world's peoples and cultures (3 credits)**

Choose one of the following:

COM 250 Intercultural Communication
HIS 211 Minority Groups in America
PHL 243 World Religions
SPN 131 Spanish I or higher

ALLIED HEALTH RELATED REQUIREMENTS (2-3 CREDITS)

Choose one of the following:

DMS 100 Introduction to Diagnostic Imaging
HOC 115 Intro to Patient Care
HOC 130 Intro to Health Occupations
MOA 112 Medical Law and Ethics
MOA 120 Medical Terminology
MED 120 MA Medical Terminology
RES 101 Intro to Respiratory Care

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on [pages 16-18](#).*

ALLIED HEALTH CORE REQUIREMENTS (33 CREDITS)

Up to 33 credits must come from approved third party certifications and/or licenses (students can submit multiple certifications/licenses if applicable), and additional courses listed under Additional Requirements. Certifications/licenses must be submitted to the program director for credit approval and determination.

Students may meet all or part of the 33-credit requirement by completing one or a combination of the following groups and courses listed:

1. Completion of the following programs at Jackson College can be applied toward the 33-credit requirement:
 - a. Health Sciences Foundations Certificate
 - b. Medical Assistant Certificate
 - c. Medical Insurance Coder/Biller Certificate
 - d. Paramedic Certificate
 - e. Patient Care Tech Certificate
 - f. Medical Office Support Certificate
2. Completion of the following courses at Jackson College will meet 10 credits of this requirement:
 - a. HOC 145 Phlebotomy Tech
 - b. HOC 150 Electronic Health Records
 - c. MOA 112 Medical Law and Ethics
3. Completion of the following courses at Jackson College will meet 7 credits of this requirement:
 - a. HOC 130 Intro to Health Occupations
 - b. HOC 135 EKG Tech
4. Completion of the following course at Jackson College will meet 12 credits of this requirement:

ADDITIONAL REQUIREMENTS TO MEET ALLIED HEALTH CORE REQUIREMENTS OF 33 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	131	Accounting for Non-Majors OR
ACC	231	Principles of Accounting
BIO	140	Public Health and Disease
PHL	236	Ethics
BUA	220	Principles of Management
BUA	120	Human Relations in Business
BUA	121	Leadership
BUA	221	Human Resource Management
SPN	131	Elementary Spanish I
SPN	132	Elementary Spanish II

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 I

Psychology / Human Behavior Focus

This focus would be for someone who may want to obtain further education in the areas of psychology and social 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.

HIS	211	Minority Groups in America
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
SOC	117	Criminology

SOC	231	Principles of Sociology
SOC	236	Women in a Changing Society
SOC	246	Marriage and Family

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.

ACC	131	Introductory Accounting for Non-Majors OR
ACC	231	Principles of Accounting
BUA	220	Principles of Management
ENT	101	Entrepreneurship: Creating Your Own Job
ENT	102	Entrepreneurial Marketing: Finding Your Niche
ENT	169	Business Plan

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 15.
- Questionnaires will be mailed to eligible applicants.
- Completed questionnaires must be returned by the stated due date.
- Diagnostic Medical Sonography 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: 73

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum grade in BIO 132 or BIO 253/254, HOC 130 and MOA 120: 3.0

Minimum Jackson College credits: 33

GENERAL EDUCATION REQUIREMENTS (21-29 CREDITS)

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

Take the following:

ENG 131 Writing Experience I

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

Choose one of the following:

COM 231 Communication Fundamentals

COM 240 Interpersonal Communication

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

Take the following:

MAT 131 Intermediate Algebra (or higher)

GEO 4: Demonstrate scientific reasoning (4-8 credits)

Choose one of the following:

BIO 132 Human Biology OR

BIO 253 Human Anatomy and Physiology I AND

BIO 254 Human Anatomy and Physiology II

GEO 5: Understand human behavior and social systems, and the principles which govern them (4 credits)

Take the following:

PSY 140 Introduction to Psychology

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

Choose one of the following:

HUM 131 Cultural Connections

ENG 249 African-American Literature

GEO 7: Understand and respect the diversity and interdependence of the world's peoples and cultures (3 credits)

Program courses meet this requirement

CARDIAC SONOGRAPHY RELATED REQUIREMENTS (14 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 145 Introduction to Basic Physics

CARDIAC SONOGRAPHY CORE REQUIREMENTS (38 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	196	Introduction to Clinical
DMS	206	Sonographic Instrumentation
DMS	240	Adult Echo II
DMS	244	Echo Clinical III

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on pages 16-18.*

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Dental Hygiene – Associate in Applied Science (DENT.AAS)

The Dental Hygiene Associate in Applied Science program consists of integrated lectures, labs and clinical experiences. As a graduate of the Jackson College dental hygiene program, the student will have the knowledge and skills necessary to provide preventive and periodontal treatment. The responsibilities of a registered dental hygienist generally include: scaling and root debridement, delivery of local anesthesia, nitrous oxide sedation, topical fluoride, antibiotic and antimicrobial medicament placement, impressions, diagnostic models, dental radiographs, dental education, nutritional counseling, and various laboratory procedures. The treatments and services are prescribed under the supervision of the dentist.

The dental hygiene program is accredited by the Commission on Dental Accreditation, or CODA. Upon successfully completing the program at Jackson College, the student will be eligible to take the national, regional and state board examinations for dental hygiene licensure.

There are various employment opportunities for the registered dental hygienist. The registered hygienist may choose employment in a general or specialty dental practice, schools, clinics, hospitals, HMOs, public health, or governmental agencies. The dental hygienist may also be employed in the area of management, research, sales, consulting or education.

Students must apply for admission to the dental hygiene program and must do so by the application deadline. The program starts every fall semester and continues for two academic years after the student has completed the prerequisite courses. Admission to the dental hygiene is highly competitive and is not guaranteed. It is the student's responsibility to understand and adhere to the specific admission criteria. Admission is based on a point system which factors in the GPA of required courses, past educational achievements or certifications, and the number of course withdrawals, repeats and/or failures. Students with the highest points will be admitted based on space availability. The selection process is subject to change.

The program for which you are applying requires that you successfully complete clinical requirements in an on-site clinic. A provider's license may be jeopardized if the State of Michigan learns through the required criminal history background clearance that they or an adult age 18 and over who is employed by them or in practicum with them, has a pending criminal charge or has been convicted of certain various crimes. 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, Jackson College requires 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. Following graduation, applicants for licensure as a registered dental hygienist will also be asked about criminal convictions and this could impact the individual's ability to become licensed. In addition, all dental hygiene students must pass a drug screen as a condition of admission to the dental hygiene program. While enrolled in the program, a student may be asked to submit to a drug test if there is reason to believe the student is under the influence of alcohol or other drugs.

Prerequisites are:

BIO	132	Human Biology OR
BIO	253	Human Anatomy & Physiology I AND
BIO	254	Human Anatomy & Physiology II
BIO	220	Microbiology
CEM	131	Fundamentals of Chemistry OR
CEM	141	General Chemistry I
PSY	140	Introduction to Psychology
ENG	131	Writing Experience I
COM	231	Communication Fundamentals OR
COM	240	Interpersonal Communication
MAT	133	Introduction to Probability & Statistics

Applications are accepted for fall admission. See a student success navigator for application deadlines. All sciences must be taken within the last eight years. Upon acceptance to the program, dental hygiene courses must be taken in sequence. Students are required to take and pass the HESI Admission Assessment (A2) prior to admission.

Minimum credits: 81

Minimum grade in dental hygiene courses: 2.5

Minimum grade in BIO 132/BIO 253 & BIO 254, & BIO 220: 2.5

Minimum Jackson College credits: 42

GENERAL EDUCATION REQUIREMENTS (34-36 CREDITS)

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

Take the following:

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

Choose one of the following:

COM	231	Communications Fundamentals
COM	240	Interpersonal Communication

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

Take the following:

MAT	133	Introduction to Probability & Statistics (preferred) (or higher)
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GEO 4: Demonstrate scientific reasoning (4 credits)

Take the following:

**GEO 5: Understand human behavior and social systems, and the principles which govern them.
(4 credits)**

Take the following:

PSY 140 Introduction to Psychology

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

Choose one of the following:

ART 111 Art History: Prehistoric – 1400

ART 112 Art History: Renaissance – Present

HUM 131 Cultural Connections

MUS 131 Understanding Music

**GEO 7: Understand and respect the diversity and interdependence of the world's peoples and cultures
(1-3 credits)**

Choose one of the following:

HIS 211 Minority Groups in America

SOC 112 Service Exploration and Social Issues

SOC 122 Service in Action

SOC 236 Women in a Changing Society

SOC 246 Marriage and Family

Dental Hygiene Related Requirements

Take the following:

BIO 132 Human Biology OR

BIO 253 Human Anatomy & Physiology I AND

BIO 254 Human Anatomy & Physiology II

CEM 131 Fundamentals of Chemistry OR

CEM 141 General Chemistry I

Dental Hygiene Core Requirements (45 credits)

Take the following:

DHY 101 Principles in Dental Hygiene I

DHY 102 Preclinical Dental Hygiene

DHY 103 Orofacial Anatomy, Histology & Embryology

DHY 104 Biochemistry & Nutrition

DHY 105 Medical Emergencies in the Dental Office

DHY 111 Principles in Dental Hygiene II

DHY 113 Radiology

DHY 114 Periodontics

DHY 115 Clinical Dental Hygiene I

DHY 120 Dental Materials

DHY 121 Pharmacology

DHY 201 Principles in Dental Hygiene III

DHY 203 Pain Management

DHY 204 Oral Pathology

DHY 205 Clinical Dental Hygiene II

DHY 211 Principles in Dental Hygiene IV

DHY 213 Community Dental Health

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on pages 16-18.*

Emergency Medical Services: EMT Basic - Certificate (EMTE.CERT)

The Emergency Medical Services: EMT Basic Certificate program prepares the student to be entry-level in delivering safe, high quality emergency patient care. The EMT-B is trained to respond to emergency calls to provide efficient and immediate care to the critically ill and injured, and to transport the patient to a medical facility. After receiving the call from the dispatcher, the EMT-B drives the ambulance to address or location given, using the most expeditious route, depending on traffic and weather conditions. The EMT-B must observe traffic ordinances and regulations concerning emergency vehicle operation.

The Emergency Medical Services Certificate (EMSC) will provide education beyond the Basic Emergency Medical Technician minimum state requirements. The program is offered three times per year (Fall, Winter, Spring). The certificate program is designed to offer students stackable credentials in EMT-B and Emergency Medical Responder or alternative health science pathway career choices. EMSC program will prepare students to become leaders, who are entry-level Emergency Medical Technicians, ready for the workforce or additional educational goals.

The program is designed in a hybrid format, offering course work online with hands-on practice in Jackson College's state of the art simulation lab and driving simulator.

Minimum credits: 16

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 16

EMERGENCY MEDICAL SERVICES RELATED REQUIREMENTS (4 CREDITS)

Choose one of the following:

- | | | |
|-----|-----|-------------------------|
| BIO | 132 | Human Biology |
| EMS | 113 | Medical First Responder |
| HOC | 135 | EKG Technician |
| HOC | 145 | Phlebotomy Technician |

EMERGENCY MEDICAL SERVICES CORE REQUIREMENTS (12 CREDITS)

Take the following:

- | | | |
|---|-----|----------------------|
| EMS | 123 | EMT-Basic Technology |
| <i>Course includes mandatory lab and clinical experiences</i> | | |

Emergency Medical Services: Paramedic - Diploma (EMTE.DIP)

The Emergency Medical Services: Paramedic Diploma is a CAAHEP-accredited program that prepares the student for employment as an advanced emergency medical care giver. 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 Health and Human Services (MDHHS) and needs to be taken in sequence. Program courses prepare the student for the National Registry of Emergency Medic Technicians (NREMT) exam(s) National Registration of Emergency Medical Technician (NREMT) - Paramedic Psychomotor and Cognitive Exams. Once the student passes the NREMT exams they are eligible to apply for state licensure as a Paramedic. 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 a diploma.

The program is designed in a hybrid format, offering course work online with hands-on practice in Jackson College's state of the art simulation lab and driving simulator.

Minimum credits: 52

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits:

EMERGENCY MEDICAL SERVICES RELATED REQUIREMENTS (12 CREDITS)

Take the following:

EMS 123 EMT-Basic Technology

**Credit for Prior Learning is available if verification of current EMT-B license is provided.*

EMERGENCY MEDICAL SERVICES CORE REQUIREMENTS (39 CREDITS)

Take the following:

BIO	132	Human Biology
EMS	180	Paramedic Advanced Practice I
EMS	182	Paramedic Pharmacology
EMS	183	Paramedic Cardiology I
EMS	184	Pediatric Advanced Support
EMS	187	Paramedic Skill Lab I
EMS	188	Paramedic Clinical I
EMS	190	Paramedic Advanced Practice II
EMS	192	Paramedic Pharmacology II
EMS	193	Paramedic Cardiology II
EMS	194	Paramedic Advanced Practice III
EMS	197	Paramedic Skill Lab II
EMS	198	Paramedic Clinical II
EMS	245	Paramedic Clinical Internship

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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 the 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.
- Diagnostic Medical Sonography Admission Committee conducts consultations.
- Students are notified by mail of application/consultation results.
- Accepted students begin spring semester.

General education prerequisites and related requirement courses must be completed before admission to the program.

Minimum credits: 80

Minimum cumulative GPA: 2.0

Minimum grade in BIO 132 or BIO 253/254, HOC 130 and MOA 120: 3.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (21 CREDITS)

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

Take the following:

ENG 131 Writing Experience I

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

Choose one of the following:

COM 231 Communication Fundamentals

COM 240 Interpersonal Communication

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

Take the following:

MAT 131 Intermediate Algebra (or higher)

GEO 4: Demonstrate scientific reasoning (4-8 credits)

Choose one of the following:

BIO 132 Human Biology OR
BIO 253 Human Anatomy and Physiology I AND
BIO 254 Human Anatomy and Physiology II

GEO 5: Understand human behavior and social systems, and the principles which govern them (4 credits)

Take the following:

PSY 140 Introduction to Psychology

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

Choose one of the following:

HUM 131 Cultural Connections
ENG 249 African-American Literature

GEO 7: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses meet this requirement.

GENERAL SONOGRAPHY RELATED REQUIREMENTS (14 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 145 Introduction to Basic Physics

GENERAL SONOGRAPHY CORE REQUIREMENTS (45 CREDITS)

Take the following:

DMS 101 Sonographic Orientation
DMS 105 Sonographic Techniques
DMS 122 Clinical Experience I
DMS 197 Introduction to Clinical
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

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on [pages 16-18](#).*

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Health Sciences Foundations – Certificate (HESC.CERT)

This program helps students acquire basic knowledge and skills in math, foundational sciences, healthcare terminology and general education courses. It provides students applying for a high demand health care associate degree program with a certificate for the completion of most general education and/or pre-

admission course requirements of the intended program. Students who plan to enter a health care program are encouraged to work with a student success navigator to develop a plan.

****Completion of this certificate does not guarantee completion of all desired program prerequisites and does not guarantee admission into the desired program. Students will work with their student success navigator on a program plan.***

Minimum credits: 30

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

General Education Requirements (17 credits)

Take the following:

ENG	131	Writing Experience I
MAT	130	Quantitative Reasoning or higher*
BIO	132	Human Biology OR
BIO	253	Human Anatomy and Physiology I AND
BIO	254	Human Anatomy and Physiology II*
PSY	140	Introduction to Psychology
HOC	110	Advanced First Aid and American Heart CPR

****Math course selection will be based on program goals***

****Biology course selection will be based on program goals***

Choose one focus, based on program goals:

NURSING FOCUS (CHOOSE AT LEAST 13 CREDITS FROM THE FOLLOWING):

NRS	145	Normal/Therapeutic Nutrition
BIO	220	Microbiology
NRS	116	Pharmacology
ENG	132	Writing Experience II OR
ENG	232	Technical and Business Writing OR
ENG	201	Advanced Composition
CEM	131	Fundamentals of Chemistry
PSY	252	Developmental Psychology
SEM	140	Seminar in Life Pathways
HUM	131	Cultural Connections

SONOGRAPHY FOCUS (CHOOSE AT LEAST 13 CREDITS FROM 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	145	Introduction to Basic Physics
COM	231	Communication Fundamentals OR
COM	240	Interpersonal Communication
SEM	140	Seminar in Life Pathways
HUM	131	Cultural Connections

RADIOGRAPHY FOCUS (CHOOSE AT LEAST 13 CREDITS FROM THE FOLLOWING):

DMS	100	Introduction to Diagnostic Imaging
HOC	130	Introduction to Health Occupations
MOA	120	Medical Terminology
COM	231	Communication Fundamentals OR
COM	240	Interpersonal Communication
SEM	140	Seminar in Life Pathways
HUM	131	Cultural Connections
ENG	132	Writing Experience II OR
ENG	232	Technical and Business Writing

RESPIRATORY CARE FOCUS (CHOOSE AT LEAST 13 CREDITS FROM THE FOLLOWING):

CEM	131	Fundamentals of Chemistry
MOA	120	Medical Terminology
SEM	140	Seminar in Life Pathways
HUM	131	Cultural Connections
RES	101	Introduction to Respiratory Care
HOC	130	Introduction to Health Occupations
NRS	116	Pharmacology
PHL	236	Ethics

DENTAL HYGIENE FOCUS (CHOOSE AT LEAST 13 CREDITS FROM THE FOLLOWING):

BIO	220	Microbiology
COM	231	Communication Fundamentals
CEM	131	Fundamentals of Chemistry OR
CEM	141	General Chemistry I
HIS	211	Minority Groups in America
HUM	131	Cultural Connections
SEM	140	Seminar in Life Pathways

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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 non-paid externship experience with a licensed health care practitioner is the culmination of the program. Upon completion of the program, students are eligible to sit for the RMA(AMT) exam.

Minimum credits: 34

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum grade in MED courses: 2.5

Minimum Jackson College credits: 15

MEDICAL ASSISTANT CORE REQUIREMENTS (34 CREDITS)

Take the following:

MED	120	MA Medical Terminology OR
MOA	120	Medical Terminology
MED	125	Introduction to Body Systems
MED	132	Foundations of Clinical Practice** OR
HOC	115	Introduction to Patient Care**
MED	135	MA Pharmacology and Medical Math
MED	225	MA Clinical Procedures I
MED	235	MA Clinical Procedures II
MED	251	MA Capstone
MED	252	MA Practicum
MOA	112	Medical Law and Ethics
MOA	240	Medical Office Procedures
MOA	241	Principles of Medical Coding and Billing

***Do not need to take if you have a current CNA license*

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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 medical terminology, use of electronic medical management systems, medical financial management, disease conditions, diagnostic and procedure coding, and medical office and hospital billing. This is a competency based program that allows for a variety of program completion options which may include credit for work experience or waiver by exam and therefore can be tailored to meet the needs of both the novice and experienced coder or biller to prepare for numerous industry credentials.

Minimum credits: 24

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum grades in MIC141, MIC241, and MIC242: 2.5

Minimum Jackson College credits: 15

MEDICAL INSURANCE CODER/BILLER CORE REQUIREMENTS (24 CREDITS)

Take the following:

MED	125	Intro to Body Systems
MIC	141	Principles of Medical Coding & Billing
MOA	112	Medical Law and Ethics
MOA	120	Medical Terminology
MIC	241	Physician Office Medical Coding
MIC	242	Advanced Medical Billing
MIC	255	Coder/Biller Capstone

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Medical Office Support – Certificate (MEOS.CERT)

The Medical Office Support program 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 health science program.

Minimum credits: 19

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum JC credits: 12

MACRAO Agreement: No

MEDICAL OFFICE SUPPORT CORE REQUIREMENTS (19 CREDITS)

Take the following:

MED	125	Intro to Body Systems
MED	120	MA Medical Terminology OR
	MOA 120	Medical Terminology
MED	132	Foundations of Clinical Practice
MOA	112	Medical Law and Ethics
MOA	240	Medical Office Procedures
MOA	241	Principles of Medical Coding and Billing OR
	MIC 141	Principles of Medical Coding and Billing

Nursing

Nursing is a dynamic and changing field with broader employment opportunities than ever before. It is expected to have one of the largest numbers 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.

PROGRAM CHOICES

- Nursing – Associate in Applied Science
- Nursing, LPN to AAS – 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 plan to transfer to during their first semester.

Nursing – Associate in Applied Science (NURS.AAS)

The Associate in Applied Science, Nursing (AAS) 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 AAS program are eligible to apply for the licensing examination (NCLEX-RN) required for licensure as a registered professional nurse (RN).

The Jackson College's Associate in Applied Science Nursing Degree is approved by Michigan Licensing and Regulatory Affairs (LARA) located at 511 W Ottawa, P.O. Box 30004, Lansing, MI 48909, 517.373.1820, and is accredited by the National League for Nursing Commission for Nursing Education Accreditation (NLN CNEA) located at 2600 Virginia Avenue, NW, Washington, DC 20037. (202) 909-2526.

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 "AAS Selection Process - Worksheet."

Students are required to take the Kaplan NCLEX-RN Review Program as part of the curriculum in order to graduate. Multiple standardized exams are also required at various points in the program. Most 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 Jackson College 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, as well as complete immunizations (as required for health care 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:

- MAT 133 Introduction to Probability & Statistics
- BIO 253 Human Anatomy and Physiology I AND BIO 254 Human Anatomy and Physiology II
- CEM 131 Fundamentals of Chemistry

General Education Requirements:

- ENG 131 Writing Experience I
- PSY 140 Introduction to Psychology

Applications are accepted for fall or winter admission. See a student success navigator for application deadlines. It is highly recommended that chemistry be taken prior to Human Anatomy & Physiology. All sciences must be taken within the last eight years. Nursing courses MUST be taken in sequence. Students are required to take and pass the standardized admission test prior to admission.

Minimum credits: 65

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum grades in BIO 253 and BIO 254: 2.5

Minimum Jackson College credits: 39

GENERAL EDUCATION REQUIREMENTS (22 CREDITS)

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

Take one of the following:

ENG 131 Writing Experience I

GEO 2: Speak clearly, concisely and intelligibly

Program courses meet this requirement.

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

Take the following:

MAT 133 Introduction to Probability & Statistics (or higher)

**Note: MAT 133 is preferred for maximum application points.*

GEO 4: Demonstrate scientific reasoning (8 credits)

Take the following:

BIO 253 Human Anatomy and Physiology I

BIO 254 Human Anatomy and Physiology II

GEO 5: Understand human behavior and social systems, and the principles which govern them (4 credits)

Take the following:

PSY 140 Introduction to Psychology

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

Choose one of the following:

HUM 131 Cultural Connections

ENG 249 African-American Literature

GEO 7: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses meet this requirement.

NURSING RELATED REQUIREMENTS (4 CREDITS)

Take the following:

CEM 131 Fundamentals of Chemistry

NURSING CORE REQUIREMENTS (39 CREDITS)

Take the following:

NRS 111 Nursing Skills*

NRS 116 Pharmacology

NRS 119 Health Assessment*

NRS 120 Nursing Fundamentals*

NRS 210 Medical Surgical 1*

NRS 211 Women and Neonate Concepts*

NRS 212 Behavioral Health*

NRS 213 Pediatrics*

NRS 214 Medical Surgical 2*

NRS 217 Pathophysiology I

NRS 218 Pathophysiology II

NRS	230	Medical Surgical 3*
NRS	240	Nursing Capstone*

**These courses also have lab and/or clinical components that must be registered for as corequisites.*

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.

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on pages 16-18.*

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Nursing – LPN to AAS – Associate in Applied Science (TNUR.AAS)

The Associate in Applied Science, Nursing – LPN to AAS 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 AAS 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 AAS 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.

Candidates entering the LPN to AAS program will need to meet the competency based educational (CBE) requirements by having a valid Michigan unencumbered LPN license, have obtained 1000 cumulative practice hours by start of the program and must pass the following competency exams: National League for Nursing (NLN) Foundations of Nursing Standardized Admission, NLN Pharmacology and Health Assessment skills practicum examinations. Most 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 Jackson College 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, as well as complete immunizations (as required for health care 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: 61

Minimum cumulative GPA: 2.0

Minimum grades in all courses: 2.0

Minimum grade in BIO 253 and BIO 254: 2.5

Minimum Jackson College credits: 28

It is highly recommended that chemistry be taken prior to Human Anatomy & Physiology (BIO 253 & 254). All sciences must be taken within the last eight years. Nursing courses **MUST** be taken in sequence. 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 (22 CREDITS)

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

Choose one of the following:

ENG 131 Writing Experience I

GEO 2: Speak clearly, concisely and intelligibly

Program courses meet this requirement.

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

Take the following:

MAT 133 Introduction to Probability & Statistics (or higher)

*Note: MAT 133 is preferred for maximum application points.

GEO 4: Demonstrate scientific reasoning (8 credits)

Take the following:

BIO 253 Human Anatomy and Physiology I

BIO 254 Human Anatomy and Physiology II

GEO 5: Understand human behavior and social systems, and the principles which govern them (4 credits)

Take the following:

PSY 140 Introduction to Psychology

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

Choose one of the following:

HUM 131 Cultural Connections

ENG 249 African-American Literature

GEO 7: Understand and respect the diversity and interdependence of the world's peoples and cultures.

Program courses meet this requirement.

NURSING (LPN TO AAS) RELATED REQUIREMENTS (4 CREDITS)

Take the following:

CEM 131 Fundamentals of Chemistry

NURSING (LPN TO AAS) CORE REQUIREMENTS (28 CREDITS)

Take the following:

NRS	210	Medical-Surgical Nursing 1
NRS	211	Women and Neonate Concepts
NRS	212	Behavioral Health
NRS	213	Pediatrics
NRS	214	Medical Surgical 2*
NRS	217	Pathophysiology I
NRS	218	Pathophysiology II
NRS	230	Medical Surgical 3*
NRS	240	Nursing Capstone*

**These courses also have lab and/or clinical components that must be registered for as corequisites.*

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.

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on pages 16-18.*

Practical Nursing – Certificate (PNCE.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, clinical experiences and simulations. 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 a student success navigator 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 Jackson College as part of their curriculum in order to graduate.

Most 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 Jackson College 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 Jackson College, as well as complete immunizations (as required for health care 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:

BIO 132 Human Biology OR
BIO 253 Human Anatomy and Physiology I AND
BIO 254 Human Anatomy and Physiology II

Minimum Credits: 33

Minimum Cumulative GPA: 2.0

Minimum grade in all prerequisite and nursing courses: 2.0*

Minimum Jackson College credits: 26

*Check the points system in the PN selection process worksheet regarding values of points for designated grades. Admission is competitive and based on grades.

Practical Nursing Related Requirements (4 credits)

Take the following:

BIO 132 Human Biology OR
BIO 253 Human Anatomy & Physiology I AND
BIO 254 Human Anatomy & Physiology II

Practical Nursing Core Requirements (29 credits)

Take the following:

PNC 110 Foundations of Nursing
PNC 111 Foundations Skills Lab*
PNC 112 Practical Nurse Pharmacology I
PNC 113 Practical Nurse Pharmacology II
PNC 120 Medical-Surgical Nursing I*
PNC 130 Medical-Surgical Nursing II*
PNC 140 Medical-Surgical Nursing III*
PNC 150 Maternal /Newborn Concepts*
PNC 160 Pediatric Concepts*
PNC 170 Entry into Practice*

**These courses also have lab and/or clinical components that must be registered for as corequisites.*

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Patient Care Technician - Certificate

The patient care tech program provides students with the training needed to provide basic care to patients in a hospital or nursing home setting. Upon completion, students will be eligible to take the national certification exam.

Minimum credits: 23

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

PATIENT CARE TECHNICIAN CORE REQUIREMENTS (23 CREDITS)

Take the following:

HOC	110	CPR & First Aid
HOC	115	Intro to Patient Care**
**Or current CENA License		
HOC	135	EKG Tech
HOC	145	Phlebotomy Tech
HOC	150	Electronic Health Records
MOA	112	Medical Law and Ethics
MOA	120	Medical Terminology
MED	125	Intro to Body Systems

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Radiography – Associate in Applied Science (RADI.AAS)

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 253 and BIO 254, DMS 100, HOC 130 and MOA 120 must be completed successfully before applying to the program.

Minimum credits: 82

Minimum cumulative GPA: 2.0

Minimum grade in BIO 132 or BIO 253/254, DMS 100, HOC 130 and MOA 120: 3.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (21 CREDITS)

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

Take the following:

ENG 131 Writing Experience I

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

Choose one of the following:

COM 231 Communication Fundamentals

COM 240 Interpersonal Communication

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

Take the following:

MAT 131 Intermediate Algebra (or higher)

GEO 4: Demonstrate scientific reasoning (4-8 credits)

Choose from the following:

BIO 132 Human Biology OR

BIO 253 Human Anatomy and Physiology I AND

BIO 254 Human Anatomy and Physiology II

GEO 5: Understand human behavior and social systems, and the principles which govern them (4 credits)

Take the following:

PSY 140 Introduction to Psychology

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

Choose one of the following:

HUM 131 Cultural Connections

ENG 249 African-American Literature

GEO 7: Understand and respect the diversity and interdependence of the world's peoples and culture

Program courses meet this requirement.

RADIOGRAPHY RELATED REQUIREMENTS (9 CREDITS)

Take the following:

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

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on pages 16-18.*

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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.

There are special admission requirements to the respiratory care program, and it is the student's responsibility to understand the requirements and adhere to them. Admission to the program is not guaranteed; entry into the program is competitive and based on a "point system." The order of acceptance of qualified applicants will be based on points achieved.

Applications are processed according to the following:

- Applications must be received by the Allied Health Office by November 1.
- Students are notified by mail of application results.
- Accepted students begin winter semester.
- BIO 132 or BIO 253 and BIO 254 (2.5 minimum), MAT 130 (3.0 minimum), ENG 131, and MOA 120 must be successfully completed before admission to the program.

Minimum credits: 72

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum grade in BIO 132 or BIO 253 and BIO 254 and MAT 130: 2.5

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (18 CREDITS)

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

Take the following:

ENG 131 Writing Experience I

GEO 2: Speak clearly, concisely and intelligibly

Program courses meet this requirement.

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

Take the following:

MAT 130 Quantitative Reasoning (or higher)

GEO 4: Demonstrate scientific reasoning (4-8 credits)

Choose one of the following:

BIO 132 Human Biology OR

BIO 253 Human Anatomy and Physiology I AND

BIO 254 Human Anatomy and Physiology II

GEO 5: Understand human behavior and social systems, and the principles which govern them (4 credits)

Take the following:

PSY 140 Introduction to Psychology

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

Choose one of the following:

HUM 131 Cultural Connections

ENG 249 African-American Literature

GEO 7: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses meet this requirement.

RESPIRATORY CARE RECOMMENDED COURSES (9 CREDITS)

Take the following:

CEM 131 Fundamentals of Chemistry

MOA 120 Medical Terminology

RES 101 Introduction to Respiratory Care

RESPIRATORY CARE CORE REQUIREMENTS (54 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	204	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

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on [pages 16-18](#).*

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 1,152 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.
- Diagnostic Medical Sonography 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: 79

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum grade in BIO 132 or BIO 253/254, HOC 130 and MOA 120: 3.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (21 CREDITS)

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

Take the following:

ENG 131 Writing Experience I

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

Choose one of the following:

COM 231 Communication Fundamentals

COM 240 Interpersonal Communication

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

Take the following:

MAT 131 Intermediate Algebra (or higher)

GEO 4: Demonstrate scientific reasoning (4-8 credits)

Choose one of the following:

BIO 132 Human Biology OR

BIO 253 Human Anatomy and Physiology I AND

BIO 254 Human Anatomy and Physiology II

GEO 5: Understand human behavior and social systems, and the principles which govern them (4 credits)

Take the following:

PSY 140 Introduction to Psychology

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

Choose one of the following:

HUM 131 Cultural Connections

ENG 249 African-American Literature

GEO 7: Understand and respect the diversity and interdependence of the world's peoples and cultures Program courses meet this requirement.

VASCULAR SONOGRAPHY RELATED 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

VASCULAR SONOGRAPHY CORE REQUIREMENTS (43 CREDITS)

Take the following:

DMS	102	Vascular Anatomy, Physiology and Pathophysiology
DMS	103	Introduction to Sonographic Reasoning and Research
DMS	160	Introduction to Vascular Technology and Professional Lab Practice
DMS	161	Vascular Clinical I
DMS	202	Basic Cardiovascular Principles, Hemodynamics and Doppler Waveforms
DMS	203	Venous Duplex Testing
DMS	205	Arterial Duplex and Physiological Testing
DMS	206	Sonographic Instrumentation
DMS	207	Cerebrovascular Procedures
DMS	208	Advanced Imaging
DMS	209	Vascular Technology Review Capstone
DMS	265	Vascular Clinical II
DMS	266	Vascular Clinical III

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on pages 16-18.*

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Vascular Sonography – Certificate (VASO.CERT)

Minimum credits: 59

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum grade in BIO 132 or BIO 253/254, HOC 130 and MOA 120: 3.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (11 CREDITS)

Take the following:

ENG	131	Writing Experience I
MAT	131	Intermediate Algebra or higher level
BIO	132	Human Biology OR
BIO	253	Human Anatomy and Physiology I AND
BIO	254	Human Anatomy and Physiology II

VASCULAR SONOGRAPHY RELATED REQUIREMENTS (5 CREDITS)

Take the following:

DMS	104	Introduction to Sonographic Instrumentation
PHY	145	Introduction to Basic Physics

VASCULAR SONOGRAPHY CORE REQUIREMENTS (43 CREDITS)

Take the following:

DMS	102	Vascular Anatomy, Physiology and Pathophysiology
DMS	103	Introduction to Sonographic Reasoning and Research
DMS	160	Introduction to Vascular Technology and Professional Lab Practice

DMS	161	Vascular Clinical I
DMS	202	Basic Cardiovascular Principles, Hemodynamics and Doppler Waveforms
DMS	203	Venous Duplex Testing
DMS	205	Arterial Duplex and Physiological Testing
DMS	206	Sonographic Instrumentation
DMS	207	Cerebrovascular Procedures
DMS	208	Advanced Imaging
DMS	209	Vascular Technology Review Capstone
DMS	265	Vascular Clinical II
DMS	266	Vascular Clinical III

HUMAN SERVICES PATHWAY

Do you enjoy helping other people? Are you sympathetic to people in unfortunate situations? Are you friendly, open, understanding and cooperative? Is it important for you to do something that makes things better for other people? Would you enjoy teaching people to improve their lives? Do you like to help friends with problems? This could be your career path!

Those interested in the Human Services Pathway must keep in mind that this field is a very broad one. Through an interdisciplinary knowledge base, this career path is concerned with meeting human needs. The focus is on prevention as well as remediation of problems, with the main goal of improving the overall quality of life for others. Careers in this path are related to economic, political and social systems. Individuals in the human service field might find themselves in a variety of careers, including psychology, counseling, social work, government, law and law enforcement or education. Human services careers are perfect for people who are at their best when they are helping others.

DEGREES/CERTIFICATES

- Behavioral Sciences
- Corrections
- Law Enforcement

Behavioral Sciences Certificate (BHSC.CERT)

This certificate is designed for students who plan to transfer to four-year institutions as psychology majors. Certificate graduates could also find entry-level employment as clinic technicians in human services fields. This coursework also fulfills many general education requirements for the Associate in Arts degree. Students should verify requirements with their transfer institutions.

Minimum credits: 25

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (7 CREDITS)

Take the following:

ENG	131	Writing Experience I
PSY	140	Introduction to Psychology

CORE REQUIREMENTS (18 CREDITS)

Choose one focus, based on transfer or program goals:

PSYCHOLOGY FOCUS:

Choose six of the following:

BIO	132	Human Biology
PSY	144	Introduction to Probability and Statistics for Behavioral Science Research OR
MAT	133	Introduction to Probability and Statistics
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 OR
PSY	252	Developmental Psychology
PSY	251	Abnormal Psychology
PSY	290	Human Sexuality
PSY	344	Organizational Psychology

SOCIAL WORK FOCUS:

Take the following:

SOC	231	Principles of Sociology
SOC	236	Women in a Changing Society
SOC	246	Marriage and Family
SOC	152	Social Psychology (cross listed with PSY 152 Social Psychology)
HIS	211	Minority Groups in America
BIO	132	Human Biology

POLITICAL SCIENCE FOCUS:

Take the following:

PLS	141	American National Government
PSL	262	International Relations
HIS	235	20 th Century History
HIS	211	Minority Groups in America

Choose two of the following:

ANT	131	Cultural Anthropology
ECN	231	Macroeconomics
ECN	232	Microeconomics
HIS	231	Development of the U.S. through the Civil War
HIS	232	Development of the U.S. from the Civil War
SOC	236	Women in a Changing Society

LAW ENFORCEMENT FOCUS:

Take the following:

CRJ	101	Criminal Law
CRJ	111	Introduction to Criminal Justice
CRJ	112	Crime & Delinquency
CRJ	114	Police Administration & Operations
CRJ	117	Criminology
CRJ	121	Introduction to Corrections

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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 receive 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: 63

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (23-25 CREDITS)

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

Take the following:

ENG 131 Writing Experience I

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

Choose one of the following:

COM 231 Communication Fundamentals

COM 240 Interpersonal Communication

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

Take the following:

MAT 130 Quantitative Reasoning (or higher)

GEO 4: Demonstrate scientific reasoning (4 credits)**

Choose one of the following:

BIO 110 Introductory Biology

CEM 131 Fundamentals of Chemistry

GEL 109 Earth Science

NSC 131 Contemporary Science

PHY 131 Conceptual Physics

GEO 5: Understand human behavior and social systems, and the principles which govern them (3 credits)

Take the following:

PLS 141 American National Government

GEO 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

HUM 131 Cultural Connections

MUS 131 Understanding Music

GEO 7: 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
COM	250	Intercultural Communications
HIS	211	Minority Groups in America
PLS	262	International Relations

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 OR
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.

****We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on pages 16-18.**

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Corrections – Certificate (CORR.CERT)

This certificate program offers an opportunity to begin a study of all the components of corrections. Students will explore institutions, private security, and the general safekeeping 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 specialists (both public and private) and private security.

Minimum credits: 18

Minimum cumulative GPA: 2.0

Minimum grade in each course: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (3 CREDITS)

Take the following:

ENG 131 Writing Experience I

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

*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.

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: 63

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (26-28 CREDITS)

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

Take the following:

ENG 131 Writing Experience I
ENG 132 Writing Experience II

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

Choose one of the following:

- | | | |
|-----|-----|-----------------------------|
| COM | 231 | Communication Fundamentals |
| COM | 240 | Interpersonal Communication |

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

Take the following:

- | | | |
|-----|-----|------------------------------------|
| MAT | 130 | Quantitative Reasoning (or higher) |
|-----|-----|------------------------------------|

GEO 4: Demonstrate scientific reasoning (4-5 credits)**

Choose one of the following:

- | | | |
|-----|-----|---------------------------|
| BIO | 110 | Introductory Biology |
| CEM | 131 | Fundamentals of Chemistry |
| GEL | 109 | Earth Science |
| NSC | 131 | Contemporary Science |
| PHY | 131 | Conceptual Physics |

GEO 5: Understand human behavior and social systems, and the principles which govern them (3 credits)

Take the following:

- | | | |
|-----|-----|------------------------------|
| PLS | 141 | American National Government |
|-----|-----|------------------------------|

GEO 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 |
| HUM | 131 | Cultural Connections |
| MUS | 131 | Understanding Music |

GEO 7: 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 |
| COM | 250 | Intercultural Communications |
| HIS | 211 | Minority Groups in America |
| PLS | 262 | International Relations |

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 |

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

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on pages **16-18**.*

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LIBERAL ARTS PATHWAY

Careers in the Liberal Arts Pathway are related to the humanities and performing, visual, literary, and media arts. These include 3-D design and animation, art, broadcasting, communication, dance, digital photography, English (journalism, writing and literature), film, graphic design, history, music, pre-law, and world languages.

Are you a creative thinker? Are you imaginative, innovative and original? Do you like to communicate ideas? Do you like making crafts, drawing, playing a musical instrument, taking photos or writing stories? This may be the career path for you!

Students entering the Liberal Arts Pathway can complete these associate degrees:

- Associate in Applied Science - Graphic Design
- Associate in Arts
- Associate in Arts - Communication
- Associate in General Studies

Students entering the Liberal Arts Pathway can complete certificates in:

- 3-D Design & Animation
- Digital Photography
- Graphic Design
- Studio Art
- Liberal Arts

Students in the Liberal Arts Pathway frequently complete their associate degree and then transfer to a four-year college or university to continue their academic degree in their major or program of study. Deciding upon a transfer institution early on in the Liberal Arts Pathway will help ensure that requirements are met and that the correct sequence of courses is taken for a smooth transfer.

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3D Design and Animation – Certificate (DDDA.CERT)

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 is action-packed, collaborative and exhilarating should inquire here.

Minimum credits: 24

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

RELATED REQUIREMENTS (6 CREDITS)

Take the following:

ART 103 Drawing I: Foundations

Choose one of the following:

ART 205 Drawing II: Figure and Composition

CIS 137 Digital Photography I

CIS 170 Programming in C++

ENT 101 Entrepreneurship: Creating Your Own Job

CORE REQUIREMENTS (18 CREDITS)

Take the following:

CIS 101 Introduction to Computer Systems

CIS 132 Graphic Illustration

CIS 134 Graphic Imaging

CIS 183 Introduction to Animation

CIS 274 3D Modeling Techniques

CIS 279 Lighting & Texturing

.....

Associate in Arts (ARTS.AA)

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 the arts, business, creative writing, criminal justice, economics, education, history, interdisciplinary humanities, literature, philosophy, political science, psychology, social work, speech communication and world languages.

Bachelor of Arts degrees in subject areas vary from one college or university to another. Prior to beginning a curriculum, students should contact the transfer institutions that interest them and a Jackson College student success navigator to create a pathway map toward their degree.

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.

Minimum credits: 60

Minimum grade in all courses: 2.0

Minimum cumulative GPA: 2.0

GENERAL EDUCATION REQUIREMENTS (35-37 CREDITS)

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

Take the following:

ENG 131 Writing Experience I

Choose one of the following:

ENG 132 Writing Experience II

ENG 201 Advanced Composition

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

Choose one of the following:

COM 231 Communications Fundamentals

COM 240 Interpersonal Communication

GEO 3: Demonstrate computational skills and mathematical reasoning (4-5 credits)

Take the following:

MAT 130 Quantitative Reasoning (or higher)

GEO 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:

Non-laboratory Science Courses:

BIO 140 Public Health and Disease

PHY 150 Concepts in Astronomy

Lab Science Courses:

BIO 110 Introductory Biology

BIO 132 Human Biology

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

GEO 5: Understand human behavior and social systems, and the principles which govern them

(6 credits)**Choose two of the following from two different disciplines:**

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

GEO 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	242	Sports in Film & Literature
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	249	African-American Literature
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

GEO 7: 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	242	Sports in Literature and Film
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
HIS	211	Minority Groups in America
HUM	131	Cultural Connections

MUS	130	Music of Non-Western Cultures
PHL	243	World Religions
PLS	262	International Relations
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 a student success navigator 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, 030, 031, 033, 035, 039; 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).

Associate in General Studies (GEST.AGS)

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

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.

Minimum credits: 60

Minimum grade in all courses: 2.0

Minimum cumulative GPA: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (35-42 CREDITS)

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

Take the following:

ENG 131 Writing Experience I

Choose one of the following:

ENG 132 Writing Experience II

ENG 201 Advanced Composition

ENG 232 Technical & Business Writing

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

Choose one of the following:

COM 231 Communication Fundamentals

COM 240 Interpersonal Communication

GEO 3: Demonstrate computational skills and mathematical reasoning (4-5 credits)**Take the following:**

MAT 130 Quantitative Reasoning (or higher)

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

BIO 110 Introductory Biology
BIO 132 Human Biology
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

GEO 5: Understand human behavior and social systems, and the principles which govern them (3-4 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
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

GEO 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	242	Sports in Film and Literature
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	249	African-American Literature
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

GEO 7: 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	242	Sports in Literature and Film
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
HIS	211	Minority Groups in America
HUM	131	Cultural Connections
PHL	243	World Religions
PLS	262	International Relations
MUS	130	Music of Non-Western Cultures
SOC	236	Women in Changing Society
SOC	246	Marriage and Family
SPN	131	Spanish I or higher

ADDITIONAL DEGREE REQUIREMENTS

Choose at least 6 credit hours from two of the following four areas: Natural Science, Social Science, Humanities and Diversity.

NATURAL SCIENCE

Must be a different course than taken for GEO 4.

Non-laboratory Science Courses:

BIO	140	Public Health and Disease
PHY	150	Concepts in Astronomy

Lab Science Courses:

BIO	110	Introductory Biology
BIO	132	Human Biology
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

SOCIAL SCIENCE

Must be a different course than taken for GEO 5.

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

HUMANITIES

Must be a different course than taken for GEO 6.

ART	111	Art History: Prehistoric to 1400
ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
ENG	242	Sports in Film and Literature
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	249	African-American Literature
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

DIVERSITY

Must be a different course than taken for GEO 7.

ANT	131	Cultural Anthropology
ENG	236	Women in Changing Society
ENG	242	Sports in Literature and Film
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
HIS	211	Minority Groups in America
HUM	131	Cultural Connections
PHL	243	World Religions
PLS	262	International Relations
MUS	130	Music of Non-Western Cultures
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 019, 020, 030, 031, 033, 035 039; 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 Jackson College's workforce training programs (prefixes JTI, PDI).

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Communication - Associate in Arts (COMM.AA)

The Communication Associate in Arts degree is designed for students to transfer seamlessly to a baccalaureate institution and major in an area such as mass communication or journalism. Communication students apply fundamental communication concepts by creating media content, crafting messages for business, government, and education organizations, and analyzing relationships between individuals and organizations.

Minimum credits: 60

Minimum grade in all courses: 2.0

Minimum cumulative GPA: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (29-31 CREDITS)

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

Take the following:

ENG 131 Writing Experience I

Choose one of the following:

ENG 132 Writing Experience II

ENG 201 Advanced Composition

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

Program courses meet this requirement.

GEO 3: Demonstrate computational skills and mathematical reasoning (4-5 credits)

Choose one of the following:

MAT 130 Quantitative Reasoning

MAT 133 Introduction to Probability and Statistics

GEO 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:

Non-laboratory Science Courses:

BIO 140 Public Health and Disease

Lab Science Courses:

BIO 110 Introductory Biology

BIO 158 Environmental Science

CEM 131 Fundamentals of Chemistry

GEL 109 Earth Science

NSC 131 Contemporary Science

PHY 131 Conceptual Physics

GEO 5: Understand human behavior and social systems, and the principles which govern them (6 credits)

Choose two of the following from two different disciplines:

ECN 231 Macroeconomics

PSY 140 Introduction to Psychology

SOC 231 Principles of Sociology

GEO 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 242 Sports in Film & Literature

ENG 246 Short Story & Novel

ENG 247 Poetry & Drama

ENG 249 African-American Literature

ENG 252 Shakespeare

ENG	254	Children's Literature
ENG	255	American Literature – 19 th Century
ENG	256	American Literature – 20 th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre

GEO 7: Understand and respect the diversity and interdependence of the world's peoples and cultures (3-4 credits)

Program courses meet this requirement.

COMMUNICATION CORE REQUIREMENTS (15 CREDITS)

Take the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication
COM	234	Public Address
COM	250	Intercultural Communication
COM	260	Small Group Communication

TRANSFER ELECTIVES (14-16 CREDITS)

Select additional course based on transfer institution and program so degree totals 60 credit hours.

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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, and advertising work, 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 Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (10 CREDITS)

Take the following:

COM	231	Communication Fundamentals
ENG	131	Writing Experience I
MAT	130	Quantitative Reasoning (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 two of 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 department of corporations, government agencies and retailers.

Minimum credits: 60

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (23-25 CREDITS)

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

Take the following:

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

Take the following:

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

Take the following:

MAT	130	Quantitative Reasoning or higher
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GEO 4: Demonstrate scientific reasoning (4 credits)**

Choose one of the following:

GEL	109	Earth Science
NSC	131	Contemporary Science

GEO 5: Understand human behavior and social systems, and the principles which govern them (3-4 credits)**

Choose one of the following:

PLS	141	American National Government
PSY	140	Introduction to Psychology
PSY	152	Social Psychology
SOC	231	Principles of Sociology

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

Choose one of the following:

ART	112	Art History: Renaissance to Present
ENG	210	Introduction to Film
MUS	132	History of American Popular Music

GEO 7: 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
COM	250	Intercultural Communications
HIS	211	Minority Groups in America
HUM	131	Cultural Connections
PLS	262	International Relations

GRAPHIC DESIGN RELATED REQUIREMENTS (6 CREDITS)

Choose one of the following:

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

Choose one of the following:

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

GRAPHIC DESIGN CORE REQUIREMENTS (31 CREDITS)

Take the following:

CIS	126	Digital Design Fundamentals
CIS	127	Introduction to Creative Software (Adobe® Creative Cloud)
CIS	128	Typography & Layout
CIS	132	Graphic Illustration (Adobe® Illustrator®)
CIS	134	Graphic Imaging (Adobe® Photoshop®)
CIS	135	Open Source Web
CIS	136	Integrated Design I (Adobe® InDesign®)
CIS	183	Introduction to Animation
CIS	188	Print Production
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: 21

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

GRAPHIC DESIGN CORE REQUIREMENTS (21 CREDITS)

Take the following:

CIS	126	Digital Design Fundamentals
CIS	127	Introduction to Creative Software (Adobe® Creative Cloud)
CIS	128	Typography & Layout
CIS	132	Graphic Illustration (Adobe® Illustrator®)
CIS	134	Graphic Imaging (Adobe® Photoshop®)
CIS	136	Integrated Design I (Adobe® InDesign®)
CIS	188	Print Production

Liberal Arts – Diploma (LIBA.DIP)

This diploma is designed for students who plan to transfer to a baccalaureate institution. Students should meet with their student success navigator to create a program plan specific to the needs and requirements of the desired transfer institution. Students completing this program are also eligible for the Michigan Transfer Agreement (MTA) endorsement and will have met the general education requirements for an Associate in Arts degree.

**To be eligible for Title IV Federal funding, students enrolled in the Liberal Arts Diploma should also enroll in the Associate in Arts degree. The Liberal Arts Diploma as a stand-alone program is not eligible for Title IV Federal funding (financial aid).*

Minimum credits: 36

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

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

Take the following:

ENG	131	Writing Experience I
ENG	132	Writing Experience II

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

Choose one of the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication
COM	250	Intercultural Communication

GEO 3: Demonstrate computational skills and mathematical reasoning (4-5 credits)

Choose one of the following:

MAT	130	Quantitative Reasoning
MAT	133	Introduction to Probability & Statistics
MAT	139	College Algebra
MAT	141	Pre-calculus
MAT	151	Calculus I

GEO 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:

BIO	110	Introductory Biology
BIO	132	Human Biology
CEM	131	Fundamentals of Chemistry
GEL	109	Earth Science
NSC	131	Contemporary Science
PHY	131	Conceptual Physics

GEO 5: Understand human behavior and social systems, and the principles which govern them (6 credits)

Choose two of the following from two different disciplines:

CRJ	111	Introduction to Criminal Justice
CRJ	117	Criminology
ECN	231	Macroeconomics
ECN	232	Microeconomics
GEO	131	Physical Geography
HIS	231	Development of the US through the Civil War
HIS	232	Development of the US after the Civil War
PSY	140	Introduction to Psychology
PLS	141	American National Government
SOC	231	Principles of Sociology

GEO 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	Film as Literature
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	254	Children's Literature
ENG	255	American Literature – 19 th Century

ENG	256	American Literature – 20 th Century
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theater

GEO 7: 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	242	Sports in Literature and Film
ENG	249	African-American Literature
ENG	257	World Literature
HIS	211	Minority Groups in America
MUS	130	Music of Non-Western Culture
PHL	243	World Religions

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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, 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 Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (10 CREDITS)

Take the following:

COM	231	Communication Fundamentals
ENG	131	Writing Experience I
MAT	130	Quantitative Reasoning (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 two of 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

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SCIENCE, TECHNOLOGY, ENGINEERING and MATHEMATICS PATHWAY

Are you interested in how things are built and how they work? Whether looking at people, animals, plants, machines, buildings, the earth or the universe, students in Science, Technology, Engineering and Mathematics Pathway (STEM) have an interest in understanding how the world works. And with our rapidly improving technologies, there are always new boundaries to push and new things to learn. As a result, technologies we can barely dream of today will be the reality 10 years from now, and STEM students will be on the leading edge of those changes.

How can this interest be turned into a career? The possibilities are endless:

- Some will use their knowledge and skills to improve the lives of others through medical care.
- Some will use statistical analysis to make better business decisions or understand disease outbreaks.
- Some will be fascinated by the idea of designing the next breakthrough car, building or bridge.
- Some will design robots to find earthquake survivors or mine minerals on asteroids.
- Some will discover more efficient ways to break down crude oil after a pipeline leak.
- Some will focus on “pure science,” increasing the knowledge base for the next generation.
- And thousands of other possible futures for STEM students await!

At Jackson College, students in the STEM pathway can choose any of the four areas to follow, eventually leading to an Associate in Science, an Associate in Applied Science (or Certificate) in Environmental Science, a Pre-Professional Studies Certificate or a Fundamentals of Engineering Certificate.

Most STEM students will then transfer to a four-year college or university to earn a bachelor’s degree and may continue for a specialty master’s or doctoral degree depending on their interest area.

Examples of topics of study and careers for the various STEM areas:

Science	Zoology	Mechanical
Astronomy		
Biology	Engineering	Math
Biochemistry	Aeronautical	Actuary
Chemistry	Architecture	Biomathematics
Environmental Science	Automotive	Finance
Fisheries & Wildlife	Biomedical	Forensic Accounting
Geology	Chemical	Health Informatics
Microbiology	Civil	Statistics
Neuroscience	Electrical	
Physics	Industrial	Health Care

Audiology
Dentistry
Dietetics & Nutrition
Exercise Science
Genetic Counseling
Kinesiology
Occupational Therapy
Pharmacist

Physical Therapy
Physician
Public Health
Speech Pathology
Veterinarian

Technology
Computer Engineering

Cyber Security
Geographic Information
Systems (GIS)
Information Technology
Prosthetics
Robotics

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Associate in Science (SCIE.AS)

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.

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.

Minimum credits: 60

Minimum grade in all courses: 2.0

Minimum cumulative GPA: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (26-30 CREDITS)

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

Take the following:

ENG 131 Writing Experience I

Choose one of the following:

ENG 132 Writing Experience II

ENG 201 Advanced Composition

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

Take the following:

COM 231 Communication Fundamentals

GEO 3: Demonstrate computational skills and mathematical reasoning (4-5 credits)

Choose one of the following:

MAT 141 Pre-Calculus

MAT 151 Calculus

MAT 154 Calculus II

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

Choose one of the following:

BIO 110 Introductory 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

GEO 5: Understanding human behavior and social systems, and the principles which govern them (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

GEO 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	242	Sports in Film and Literature
ENG	246	Short Story & Novel
ENG	247	Poetry & Drama
ENG	249	African-American Literature
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

GEO 7: 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	242	Sports in Film and Literature

ENG	249	African-American Literature
ENG	257	World Literature I
FRN	131	French 1 (or higher)
GEO	132	World Regions
GER	131	German I (or higher)
HIS	125	African-American History
HIS	211	Minority Groups in America
HUM	131	Cultural Connections
PHL	243	World Religions
PLS	262	International Relations
MUS	130	Music of Non-Western Cultures
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 GEO 4)

Choose from the following:

BIO	110	Introductory Biology
BIO	132	Human Biology
BIO	158	Environmental Science
BIO	253	Human Anatomy and Physiology I
BIO	254	Human Anatomy and Physiology II
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	141	General Chemistry I
CEM	142	General Chemistry II
CEM	241	Organic Chemistry I
CEM	242	Organic Chemistry II
EGR	261	Engineering Mechanics I
EGR	262	Engineering Mechanics 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

PROGRAM REQUIREMENTS

Additional courses** so that total degree equals 60 credits. Plan to visit a student success navigator 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, 030, 031, 033, 035, 039; 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 Jackson College's workforce training programs (prefixes JTI, PDI).

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

The Environmental Science Associate of Applied Science 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 Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (26-29 CREDITS)

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

Take the following:

ENG 131 Writing Experience I

Choose one of the following:

ENG 132 Writing Experience II

ENG 201 Advanced Composition

ENG 232 Technical & Business Writing

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

Choose one of the following:

COM 231 Communication Fundamentals

COM 240 Interpersonal Communications

GEO 3: Demonstrate computational skills and mathematical reasoning (4-5 credits)

Choose one of the following:

MAT 133 Introduction to Probability & Statistics

MAT 141 Pre-Calculus

MAT	151	Calculus I
MAT	154	Calculus II

GEO 4: Demonstrate scientific reasoning (4 credits)

Take the following:

BIO	158	Environmental Science
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GEO 5: Understand human behavior and social systems, and the principles which govern them (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

GEO 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	249	African-American Literature
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

GEO 7: 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
HIS	211	Minority Groups in America
HUM	131	Cultural Connections
MUS	130	Music of Non-Western Cultures
PHL	243	World Religions
PLS	262	International Relations
SOC	236	Women in Changing Society
SPN	131	Spanish I or higher

ENVIRONMENTAL SCIENCE CORE REQUIREMENTS (23-26 CREDITS)

Take the following (8 credits):

BIO	258	Field Ecology
PHL	236	Ethics

Choose two of the following, 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

Choose two from 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

ENVIRONMENTAL SCIENCE ELECTIVES (5-11 credits)

Choose from the following:

ALT	200	Principles of Alternative Energy
ART	103	Drawing I
ART	205	Drawing II
ART	121	Ceramics I
ART	152	Painting I: Design & Color
ART	240	Printmaking
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
HOC	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

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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: 34

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (10-11 CREDITS)

Take the following:

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 (23-24 CREDITS)

Take the following:

BIO	158	Environmental Science
BIO	258	Field Ecology
PHL	236	Ethics

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

GEL	109	Earth Science OR
GEL	160	Introduction to Geology
BIO	231	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

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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: 32

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

FUNDAMENTALS OF ENGINEERING CORE REQUIREMENTS (32 CREDITS)

Take the following:

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

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-veterinary, pre-medical, 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 Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (10-12 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:

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:

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:

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

PROFESSIONAL TRADES/INDUSTRY 4.0 AND AGRICULTURE PATHWAY

Do you like to work with your hands? Do you enjoy figuring out how things work and fixing problems? There is high demand for all technical trades that involve specialized skills and creative thinking. The Professional Trades and Industry 4.0 Pathway helps prepare you for these high demand jobs.

This pathway includes careers in electrical technology, manufacturing, energy systems, agriculture and aviation. Every student in these careers begins with the same basic set of skills and problem-solving curriculum. From learning to read prints and schematics to machining a special part, calculating the cost-savings of a new technology, flying aircraft, to determining the proper GPS coordinates for crop planning, Professional Trades and Industry 4.0 covers it all.

DEGREES/CERTIFICATES:

- Advanced Manufacturing
- Industrial Systems, Certified Production Technician, and Welding Certificates
- Agriculture Technology
- Electrician
- Lineworker Pre-Apprenticeship

Advanced Manufacturing – Associate in Applied Science (ADMA.AAS)

The Advanced Manufacturing – Associate in Applied Science degree 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: 61

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (23 CREDITS)

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

Take the following:

ENG 131 Writing Experience I

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

Take the following:

COM 240 Interpersonal Communication

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

Take the following:

MAT 130 Quantitative Reasoning or higher

GEO 4: Demonstrate scientific reasoning (4 credits)**

Take the following:

PHY 131 Conceptual Physics

GEO 5: Understand human behavior and social systems, and the principles which govern them (3-4 credits)**

Take the following:

PSY 140 Introduction to Psychology

GEO 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

GEO 7: Understand and respect the diversity and interdependence of the world's peoples and cultures (3 credits)**

Take the following:

HUM 131 Cultural Connections

CERTIFIED PRODUCTION TECHNICIAN CORE (16 CREDITS)

Take the following:

MFG 135 Industrial Safety

MFG 136 Blueprint Reading and Precision Measurement

MFG 137 Production Processes and Fabrication

ELT 106 Basic Electricity and Fluid Systems

INDUSTRIAL SYSTEMS CORE (22 CREDITS)

Take the following:

CAD	172	SolidWorks II
ELT	220	Industrial Motion Control
ELT	260	Basic Programmable Controllers
ELT	261	Advanced PLC
MFG	211	Robotics Operation and Programming
MFG	216	Robotics Applications and Machine Vision
MFG	262	Introduction to IIOT

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Advanced Manufacturing – Industrial Systems – Certificate (ISAM.CERT)

The Industrial Systems Certificate builds on the Certified Production Technician certificate by focusing on the processes that drive modern industrial facilities. Classes focus on robotics, automation, and the Industrial Internet of Things. Students will learn how to program robots and machines and build industrial communication networks that gather and manage data. Additionally, students will earn credentials certified by FANUC Robotics, Rockwell Automation, and the Smart Automation Certification Alliance.

Minimum credits: 22

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

INDUSTRIAL SYSTEMS CORE REQUIREMENTS (22 CREDITS)

Take the following:

CAD	151	AutoCAD I
	OR	CAD 172 SolidWorks II
ELT	220	Industrial Motion Control
ELT	260	Basic Programmable Controllers
ELT	261	Advanced PLC
MFG	211	Robotics Operation and Programming
MFG	216	Robotics Applications and Machine Vision
MFG	262	Introduction to IIOT

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Advanced Manufacturing – Welding – Certificate (WLAM.CERT)

The Advanced Manufacturing - Welding - 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: 19
Minimum cumulative GPA: 2.0
Minimum grade in all courses: 2.0
Minimum Jackson College credits: 15

WELDING CORE REQUIREMENTS (19 CREDITS)

Take the following:

MFG	136	Blueprint Reading and Precision Measurement
MFG	137	Production Process and Fabrication
WLD	100	Fundamentals of Welding
WLD	110	MIG/TIG Welding
WLD	115	Aluminum/Stainless Steel Welding

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Agriculture Technology – Associate in Applied Science (AGTE.AAS)

The Agriculture Technology Associate in Applied Science program prepares students for careers in skilled agricultural and agri-business areas. This degree will provide students with the diverse skill set necessary to work competently within the various sectors of the agriculture-food industry, including agricultural production (plant or livestock), precision farming, agribusiness and finance, sales management, soil or other conservation management, and food processing.

This degree is designed for students who seek employment in agriculture and agribusiness industries upon graduation from Jackson College. This program of study is not intended for those seeking a four-year or advanced degree in agriculture, natural resources or the natural sciences.

Those wishing to transfer to a four-year institution should pursue the Associate of Science degree, following the agriculture transfer program map.

Minimum credits: 62
Minimum grade in all courses: 2.0
Minimum cumulative GPA: 2.0
Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (27-28 CREDITS)

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

Take the following:

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

Choose one of the following:

COM	250	Intercultural Communications (Preferred)
COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

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

Take the following:

MAT	130	Quantitative Reasoning (or higher)
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GEO 4: Demonstrate scientific reasoning (8 credits)**Take the following:**

AGT	131	Introduction to Crop and Soil Science
NSC	120	Fundamentals of Agricultural Science

GEO 5: Understand human behavior and social systems, and the principles which govern them (3 credits)****Take the following:**

ECN	231	Macroeconomics
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GEO 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 the Present
MUS	131	Understanding Music

GEO 7: Understand and respect the diversity and interdependence of the world's peoples and cultures (3 credits)****Choose one of the following:**

GEO	132	World Regions
PLS	262	International Relations
SPN	131	Spanish I (or higher)

RELATED REQUIREMENTS (12 CREDITS)**Take the following:**

ACC	131	Introductory Accounting for Non-Majors
BUA	220	Principles of Management
SEM	140	Seminar in Life Pathways
ENT	101	Entrepreneurship: Creating Your Own Job OR
AGT	245	Agricultural Internship (must be a unique experience than previously given credit for)

AGRICULTURAL TECHNOLOGY CORE REQUIREMENTS (22 CREDITS)**Take the following:**

AGT	111	Agricultural and Bio Safety
AGT	113	Introduction to Food Systems
AGT	201	Integrated Pest Management
AGT	209	Introduction to Precision Farming
AGT	212	Agricultural Policy and Practices
AGT	227	Introduction to Animal Science
AGT	231	Agricultural Finance
AGT	245	Agricultural Internship
STM	101	Introduction to Sustainability

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Certified Production Technician – Certificate (PTEC.CERT)

This program covers fundamental skills used in the manufacturing industry, including safety, quality, production processes, maintenance awareness, and CAD drafting. Students who complete this program

will have the skills needed to work in manufacturing and production. At the end of each course, students will have the opportunity to earn a stackable Manufacturing Skills Standards Council (MSSC) credential, certifying their knowledge. Upon successful completion of all four MSSC assessments, students receive full Certified Production Technician (CPT) 4.0 certification.

Minimum credits: 16

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

CERTIFIED PRODUCTION TECHNICIAN CORE (16 CREDITS)

Take the following:

MFG	135	Industrial Safety
MFG	136	Blueprint Reading and Precision Measurement
MFG	137	Production Processes and Fabrication
ELT	106	Basic Electricity and Fluid Systems
CAD	152	SolidWorks I

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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: 63

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (23-25 CREDITS)

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

Take the following:

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

Choose one of the following:

COM	231	Communication Fundamentals
COM	240	Interpersonal Communication

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

Take the following:

MAT	130	Quantitative Reasoning (or higher)
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GEO 4: Demonstrate scientific reasoning (4-5 credits)

Choose one of the following:

BIO	110	Introductory Biology
CEM	131	Fundamentals of Chemistry
GEL	109	Earth Science
NSC	131	Contemporary Science
PHY	131	Conceptual Physics

GEO 5: Understand human behavior and social systems, and the principles which govern them (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

GEO 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
HUM	131	Cultural Connections
MUS	131	Understanding Music
THR	116	Introduction to Theatre

GEO 7: 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
COM	250	Intercultural Communications
HIS	211	Minority Groups in America
PLS	262	International Relations
SOC	236	Women in a Changing Society
SPN	131	Spanish I

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

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on [pages 16-18](#).*

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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: 30

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

ELECTRICIAN CORE REQUIREMENTS (30 CREDITS)

Take the following:

ELT	120	Circuit Analysis I
ELT	126	Circuit Analysis II
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 COURSES THAT CAN QUALIFY FOR STATE APPRENTICESHIP HOURS (*Not required for ELEC.CERT*)

ELT	130	Electronics I
ELT	140	Introduction to Digital Electronics
ELT	261	Advanced PLC Programming

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EMPOWER Lineworker Pre-Apprentice – Certificate (LINE.CERT)

This certificate was created in partnership with Consumers Energy

Minimum credits: 20

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

LINEWORKER PRE-APPRENTICE CORE REQUIREMENTS (20 CREDITS)

Take the following:

MFG	135	Industrial Safety
ELT	106	Basic Electricity and Fluid Systems
EGY	101	Energy Industry Fundamentals
HPF	165	Lineworker Fitness
EGY	110	Climbing Clinic
EGY	111	Climbing Orientation
EGY	112	Climbing School

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Energy Systems Management – Bachelor of Science (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 Jackson College credits: 30

GENERAL EDUCATION REQUIREMENTS (47 CREDITS)

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

Take the following:

ENG	131	Writing Experience I
ENG	232	Technical and Business Writing

GEO 2: Speak clearly, concisely, and intelligibly (6 credits)

Take the following:

COM	240	Interpersonal Communication
COM	350	Intercultural Communications

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

Take the following:

MAT	139	College Algebra
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GEO 4: Demonstrate scientific reasoning (12-13 credits)

Take the following:

CEM	131	Fundamentals of Chemistry
	OR	CEM 141 General Chemistry
PHY	131	Conceptual Physics
BIO	152	Environmental Science

GEO 5: Understand human behavior and social systems, and the principles that govern them (13 credits)

Take the following:

ECN	231	Macroeconomics
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ECN	232	Microeconomics
PSY	140	Introduction to Psychology
PSY	344	Organizational Psychology

GEO 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
MUS	131	Understanding Music
THR	116	Introduction to Theatre

GEO 7: Understand and respect the diversity of and interdependence of the world's peoples and cultures (3 credits)**

Take the following:

HUM	131	Cultural Connections
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CERTIFIED PRODUCTION TECHNICIAN RELATED REQUIREMENTS (16 CREDITS)

Take the following:

MFG	135	Industrial Safety
MFG	136	Blueprint Reading and Precision Measurement
MFG	137	Production Processes and Fabrication
ELT	106	Basic Electricity and Fluid Systems
CAD	152	SolidWorks I

ENERGY SYSTEMS MANAGEMENT CORE REQUIREMENTS (50 CREDITS)

Take the following:

ALT	200	Principles of Alternative Energy
BUA	220	Principles of Management
BUA	420	Project Management and Leadership
CAD	151	AutoCAD I
CAD	172	SolidWorks II
CAD	252	SolidWorks III
EGY	101	Energy Industry Fundamentals
EGY	220	Energy Industry Experience
EGY	345	Internship
EGY	380	Power Grid/Smart Grid
EGY	499	Senior Seminar
ELT	220	Industrial Motion Controls
ELT	260	Basic Programmable Controllers
ELT	261	Advanced PLC Programming
MFG	211	Robotics Operations and Programming
MFG	262	Principles of IIOT
STM	101	Introduction to Sustainability
STM	401	Systems Thinking

TECHNICAL ELECTIVES (7 CREDITS)

Select any courses from ALT, CAD, EGY, ELT, MAT, MFG, or WLD (or additional subjects approved by program faculty) to meet the program's 120-credit requirement.

ADDITIONAL PROGRAM REQUIREMENTS

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on [pages 16-18](#).*

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Energy Systems Technology – Associate in Applied Science (EGYT.AAS)

The Energy Systems Technology - Associate in Applied Science program prepares students for careers as technicians within the energy industry. This 60-credit degree will provide students with the diverse skill set 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 credits: 60

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (27 CREDITS)

GEO 1 Write clearly, concisely and intelligibly (6 credits)

Take the following:

ENG 131 Writing Experience I
ENG 232 Technical and Business Writing

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

Take the following:

COM 240 Interpersonal Communication

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

Take the following:

MAT 130 Quantitative Reasoning (or higher)

GEO 4: Demonstrate scientific reasoning (4-5 credits)**

Choose one of the following:

CEM 131 Fundamentals of Chemistry
CEM 141 General Chemistry I

GEO 5: Understand human behavior and social systems, and the principles that govern them (4 credits)**

Take the following:

PSY 140 Introduction to Psychology

GEO 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
MUS	131	Understanding Music
THR	116	Introduction to Theatre

GEO 7 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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CERTIFIED PRODUCTION TECHNICIAN RELATED REQUIREMENTS (16 CREDITS)

Take the following:

MFG	135	Industrial Safety
MFG	136	Blueprint Reading and Precision Measurement
MFG	137	Production Processes and Fabrication
ELT	106	Basic Electricity and Fluid Systems
CAD	152	SolidWorks I

ENERGY SYSTEMS TECHNOLOGY CORE REQUIREMENTS (17 CREDITS)

Take the following:

EGY	101	EIF Energy Industry Fundamentals
EGY	220	Energy Industry Experience
ELT	260	Basic Programmable Controllers

Choose 9 credits from the following:

ALT	200	Principles of Alternative Energy
CAD	151	AutoCAD I
EGY	110	Climbing Clinic
EGY	111	Climbing Orientation
EGY	112	Climbing School
STM	101	Introduction to Sustainability

ADDITIONAL PROGRAM REQUIREMENTS

CPR Training/ Certification

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on pages 16-18.*

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Occupational Studies – Associate in Applied Science (OCST.AAS)

This Associate of 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: 60

Minimum cumulative GPA: 2.0

Minimum grade in all courses: 2.0

Minimum Jackson College credits: 15

GENERAL EDUCATION REQUIREMENTS (23-25 CREDITS)

GEO 1: Write clearly, concisely and intelligibly

Take the following:

ENG 131 Writing Experience I

GEO 2: Speak clearly, concisely and intelligibly

Choose one of the following:

COM 231 Communication Fundamentals

COM 240 Interpersonal Communication

GEO 3: Demonstrate computational skills and mathematical reasoning

Take the following:

MAT 131 Intermediate Algebra (or higher)

GEO 4: Demonstrate scientific reasoning**

Choose one of the following:

BIO 110 Introductory Biology

CEM 131 Fundamentals of Chemistry

GEL 109 Earth Science

NSC 131 Contemporary Science

PHY 131 Conceptual Physics

GEO 5: Understand human behavior and social systems, and the principles which govern them**

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

GEO 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

HUM 131 Cultural Connections

MUS 131 Understanding Music

THR 116 Introduction to Theatre

GEO 7: Understand and respect the diversity and interdependence of the world's peoples and cultures**

Choose one of the following:

ANT 131 Cultural Anthropology

HIS	211	Minority Groups in America
PLS	262	International Relations
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	e-Commerce Fundamentals
BUA	100	Contemporary Business
ENG	232	Technical and Business Writing

OCCUPATIONAL STUDIES ELECTIVE REQUIREMENTS (20 CREDITS)

Apprenticeship Certificate of Completion. Other apprenticeship/certificate programs would need to be reviewed on a case-by-case for consideration by the lead faculty.

***We have listed the preferred course option(s) in this category, but other courses may be used to meet this requirement. Your student success navigator will assist you making the best course selection based on your schedule and interests. You can view the complete list of approved GEO courses on pages 16-18.*

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.

COURSE DESCRIPTIONS

ACCOUNTING (ACC)

ACC 131 INTRODUCTORY ACCOUNTING FOR NON-MAJORS (4 CR)

This course is designed for the business professional who must have an understanding of financial and managerial accounting as it is used in decision making. This course is not for transfer students seeking a bachelor's degree or for accounting majors. Learn about annual reports, financial statements, balance sheet accounts and accounting transactions. Focus on how accounting information is used in decision

making and not the mechanics behind that accounting information. This is an introductory accounting course required in some program areas. Students should consider their academic program and select either ACC 131 or ACC 231 for their first accounting course.

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 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.

ACC 216 FINANCIAL ACCOUNTING CONCEPTS (4 CR)

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 business administration (BUA), computer information systems (CIS) and health occupations (HOC) programs. Students should consider their academic program and select either ACC 216 or ACC 231 for their introductory accounting course.

Prerequisites: CIS 095 and MAT 040* or higher*

ACC 231 PRINCIPLES OF ACCOUNTING I (4 CR)

This course is an introductory course in financial accounting. 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. Current software and online applications will be utilized.

ACC 232 PRINCIPLES OF ACCOUNTING II (4 CR)

This course is an introductory course in managerial accounting. Learn how accounting impacts managerial decision making. Topics include stocks, bonds, cash flow, cost accounting, break-even analysis, differential analysis, financial statements and budgeting. 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 Generally Accepted Accounting Principles (GAAP) and recent Financial Accounting Standards Board (FASB) pronouncements.

Prerequisite: ACC 231

ACC 245 INTERNSHIP/EXTERNSHIP (1-3 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.

Prerequisite: Instructor Permission Required

ACC 250 TECHNOLOGY APPLICATIONS FOR ACCOUNTING (3 CR)

Today nearly all businesses rely on computer software to facilitate the accounting process and provide on demand financial information for effective decision making. Learn accounting software applications such as invoicing and working with customers, payables and working with vendors, month-end accounting and reports, as well as applications for inventory, banking, and payroll. Web-based software will be utilized in an online platform accessible to all users.

Prerequisite: ACC 131 or 231

ACC 300 FINANCIAL MANAGEMENT FOR THE HOSPITALITY INDUSTRY (4 CR)

Using a combination of management accounting and finance principles, develop your management skills in the area of financial management. With an emphasis on management decision making, students will consider topics such as financial statement reporting and analysis, budgeting, forecasting, ethics, and internal controls. Coursework and assignments will be structured to highlight the challenges and opportunities within the hospitality industry.

Prerequisite: ACC 131

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AGRICULTURE TECHNOLOGY (AGT)

AGT 111 AGRICULTURE SAFETY AND BIO SECURITY (1 CR)

This course prepares students from a variety of backgrounds to study and work safely in agricultural and agribusiness settings. Students will learn best practices for biological security and workplace safety standard in these industries. Farm safety will include proper use of power equipment and implements as well as livestock handling. This course contains lecture and field experience components.

AGT 113 INTRODUCTION TO FOOD SYSTEMS (3 CR)

This course provides students with an overview of the diverse food systems industry. Through research, guest lectures, and field experiences students will engage a cross-section of agricultural, agribusiness, governmental and food processing sectors. Emphasis will be made in identifying the unique but deeply inter-connected pieces that make up regional, national and international food systems.

AGT 131 INTRODUCTION TO PLANT AND SOIL SCIENCE (4 CR)

This course teaches principles of crop production and soil resource management. It relates soils, crop growth, physiology, and genetics to cultural demands and environmental factors. Lab investigates the identification of plant structures, crop seeds, and important pests. Also explores crop variety selection and traits, deficiency symptoms, crop scouting, basic nutrient calculations, and applications within sustainable and international agriculture.

Prerequisites: CEM 141 or NSC 120

AGT 201 INTEGRATED PEST MANAGEMENT (2 CR)

This course covers identification, biology and management of agricultural pests including weeds, insects and diseases. Course content will emphasize prevention, avoidance, monitoring and control strategies of specific pests, while examining the ecological and economic considerations of integrated pest management within crop production systems. *Prerequisites: AGT 111 and AGT 131*

AGT 202 PESTICIDES IN AGRICULTURE (1 CR)

Applied coursework in the commercial and private application of pesticides. Topics include pesticide law, product labels, equipment and calibration, safe storage and handling, formulations, and necessary calculations. Applicator certification expected upon course completion through a standardized exam.

Prerequisite: Instructor permission required

AGT 209 PRECISION FARMING (3 CR)

This course will provide students with a working knowledge of precision management systems intended for food production. Course content will cover mechanical and electronic advancements toward automation, how computers are used in food production, variable rate technology, product application, sensors, global positioning systems, yield monitors & other data collection systems. This course includes both classroom and field experience components.

Prerequisite: AGT 111

AGT 212 AGRICULTURE POLICY AND PRACTICES (1 CR)

This course introduces students to applicable state and federal agricultural policy as well as Generally Accepted Agricultural Management Practices (GAAMP) for both livestock and crop production. Students will become familiar where to locate and how to interpret and apply agricultural policies and best practices.

Prerequisite: AGT 111

AGT 227 INTRODUCTION TO ANIMAL SCIENCE (4 CR)

The classification of different species of livestock based on breeding, feeding and management techniques and how they apply to overall animal health and behavior are studied. Historical and current trends of the livestock industry both domestically and internationally are examined. The usage of animal science tools in the agriculture field and how they can be used in future career options are highlighted. Course includes 15 hours of field experience.

Prerequisites: AGT 111, and NSC 120 or CEM 141

AGT 231 AGRICULTURE FINANCE AND MANAGEMENT (3 CR)

This course will introduce students to the concepts and organization of the agri-food financing systems, including financial structures, lenders and borrowers, ownership and legal terminology. Topics will include an overview of financial analysis, cost of production, risk, leverage and feasibility, financial statements and capital costs.

Prerequisites: ACC 131 and BUA 220

AGT 245 AGRICULTURE INTERNSHIP (2 CR)

This course offers meaningful industry experience within the agricultural and/or agri-business arena. 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 upon completion of the course.

Prerequisite: Instructor permission required

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.

Prerequisite: 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.

Prerequisite: 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

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.

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ART (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.

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 21st century.

ART 112A ART HISTORY: RENAISSANCE TO PRESENT (3 CR)

This course is a survey of art history and aesthetics covering art from the Renaissance through the 21st century.

*Corequisite: ENG 086**

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 137 DIGITAL PHOTOGRAPHY I (3 CR) (Same as CIS 137)

This course demonstrates how to use and handle a digital camera, capturing the image, editing and processing images for output - such as printing, or preparing images for upload to the Internet for

websites or social media platforms. The class will include techniques and instruction on layout, composition, rules of design, history of photography, and Photoshop® or image altering program applications.

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 I: DESIGN & COLOR (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.

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.

Prerequisite: MAT 040 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.

Prerequisite: MAT 040 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.

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 the laboratory, the students will learn how to analyze quantitative environmental data through application. This class has a laboratory component.

Prerequisite: MAT 040 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 which includes dissection of preserved specimens.

Prerequisite: 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.

Prerequisite: MAT 040 or higher*

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.

Prerequisite: MAT 040 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.

Prerequisite: MTH 033 or higher*

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BUSINESS (BUA)

BUA 100 CONTEMPORARY BUSINESS (3 CR)

This course offers students an overview of today's modern business and the concepts required for managers and leaders to promote the success of today's dynamic workplace. Concepts include the economic environment, business ventures, management, leadership, human resource management, marketing, business law and finance. This course will offer each student the opportunity to explore their new skills as they identify their own business ideas.

Prerequisites: CIS 095, ENG 086* and ENG 091**

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.

*Prerequisite: CIS 095**

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.

*Prerequisite: CIS 095**

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 the development of your leadership skills, including effective use of power and influence, motivational tools, personality assessment, team communication, role modeling and performance appraisals.

*Prerequisite: CIS 095**

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.

*Prerequisite: CIS 095**

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.

*Prerequisite: CIS 095**

BUA 190 STRATEGIC BUSINESS MANAGEMENT (3 CR)

Why do some businesses succeed while others fail? How can you promote the growth and sustainability of your organization? What is your role as a future business owner or manager in the overall success of your organization? This course will outline and describe the strategies that a company's managers pursue to have a major impact on the company's performance and compete in the dynamic global nature of today's organizations. Students will explore the following topics as they gain an understanding of strategy: strategic management, competition and competitive advantage, developing strategies, and implementing strategies.

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.

*Prerequisite: CIS 095**

BUA 221 HUMAN RESOURCES MANAGEMENT (3 CR)

Create and maintain a desirable and productive workplace 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.

*Prerequisite: CIS 095**

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.

*Prerequisite: CIS 095**

BUA 231 ADVERTISING, PROMOTION & PUBLIC RELATIONS (3 CR)

Students study the principles and practices of numerous promotional tools used in marketing communications. Topics include the 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.

*Prerequisite: CIS 095**

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.

Prerequisite: Instructor permission required

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.

*Prerequisite: CIS 095**

BUA 315 INNOVATION, BRANDING, AND STRATEGIC MARKETING (3 CR)

Students will analyze methods for creating innovative product and service offerings as part of an overall brand strategy for a hospitality establishment. This course will equip students with analytical tools used in developing brands to capture market share and adapt to ever-changing consumer preferences. A robust brand strategy aligns with an organization's internal systems and culture. As a result, students will adopt the perspective of senior managers, considering the importance of team building, market research/product testing, competitive analysis, quality control/consistency, outsourcing, and complying with legal/regulatory requirements.

Prerequisites: BUA 230 and CUL 100

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, close out 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*

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COMPUTER ASSISTED DRAFTING (CAD)

CAD 151 AUTOCAD 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: Microsoft Windows and blueprint reading experience.

Prerequisite: MFG 105

CAD 152 SOLIDWORKS I (3 CR)

This course introduces students to basic modeling, assembly, and drawing creation in SolidWorks.

Prerequisite: MFG 136

CAD 172 SOLIDWORKS II (3 CR)

This course introduces students to more advanced topics in SolidWorks, including mates, sheet metal parts, and drawing production.

Prerequisite: CAD 152

CAD 251 AUTOCAD II (3 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

CAD 252 SOLIDWORKS III (3 CR)

This course seeks to prepare students for the Certified SolidWorks Professional certificate by focusing on complex projects and features using SolidWorks.

Prerequisite: CAD 152

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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.

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's or business's cost of utilities. Students will learn techniques to identify wasted energy and the methods needed to modernize an energy inefficient home.

Prerequisite: MAT 040 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

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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.

Prerequisite: MAT 033 or higher*

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 141

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. Recent chemistry (high school or CEM 131) success strongly recommended.

Prerequisites: CIS 095 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)

A 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 the Microsoft Windows operating system, learning the keyboard, understanding the World Wide Web and conducting Internet searches, and introduction to e-mail communication. 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 086*, ENG 091* and MAT 020* or higher*

CIS 104 KEYBOARD SPEED/ACCURACY (1 CR)

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 117 MICROSOFT® OUTLOOK WORKSHOP (1 CR)

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 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. Students 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.

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.

CIS 121 MICROSOFT® EXCEL COMPREHENSIVE - WINDOWS (3 CR)

Learn Microsoft 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.

Prerequisite: MAT 040 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.

Prerequisite: MAT 040 or higher*

CIS 126 DIGITAL DESIGN FUNDAMENTALS (3 CR)

Students explore fundamental methods used to compose persuasive digital layouts. Strategies in aesthetics, personal methodology, industry-standard practices are performed with the intent to deliver a clear, unique and proficient message.

Prerequisite: MAT 131 or higher

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.

CIS 128 TYPOGRAPHY & LAYOUT (3 CR)

Learn the history and principles of type identification, selection and use in the professional rendering of comprehensive print and digital layouts. Utilization of digital tools, materials and techniques are emphasized.

Prerequisite: CIS 127

CIS 129 INTRODUCTION TO PRODUCTION FOR THE DESIGNER (3 CR)

This course introduces the graphic design student to the fundamentals of production printing processes.

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.

CIS 132 GRAPHIC ILLUSTRATION (ADOBE® ILLUSTRATOR®) (3 CR)

Learn how to create professional looking illustrations using Adobe® Illustrator®. This course introduces the student to techniques used by professional designers and illustrators.

Prerequisite: CIS 127

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.

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 the security of website information and eCommerce transactions.

CIS 136 INTEGRATED DESIGN (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 127

CIS 137 DIGITAL PHOTOGRAPHY I (3 CR) (Same as ART 137)

This course demonstrates how to use and handle a digital camera, capturing the image, editing and processing images for output — such as printing, or preparing images for upload to the Internet for websites or social media platforms. The class will include techniques and instruction on layout, composition, rules of design, history of photography, and Adobe® Photoshop® or image altering program applications.

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.

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.

*Prerequisite: CIS 095**

CIS 146 WEB DESIGN & DEVELOPMENT (3 CR)

Do you want to build web pages but have no previous experience? This course will start with the basics of web design and progress to creating a dynamic and interactive web site that adapts for mobile devices. You will learn how to use the latest techniques, best practices, and current web standards including HTML5, CSS#, and JavaScript.

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 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 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 Microsoft 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 183 INTRODUCTION TO ANIMATION (3 CR)

This course introduces students to the techniques necessary to produce animated digital image sequences. Using industry standard software tools, students develop graphics and initiate the movement of their 2D and 3D objects in frame animation by actions such as rotating, scaling and tweening.

Prerequisite: CIS 134

CIS 188 PRINT PRODUCTION (3 CR)

This course introduces students to technologies and techniques involved with the printing process. Concepts behind the printing press, ink, and color are addressed and methods are applied.

Prerequisite: CIS 127 and CIS 136

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: CIS 095**

CIS 203 INTRODUCTION TO PROBABILITY & STATISTICS (4 CR) (Same as MAT 133)

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 130* or higher*

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, record preparation/presentation and employment skills. Keyboarding skills are essential.

Prerequisite: CIS 120

CIS 220 DATABASE SYSTEMS (3 CR)

This course covers the fundamental concepts of database systems focusing on design, implementation, and management. Relational, object-oriented, noSQL, and distributed database systems will be studied. Topics include data models, normalization, SQL, database administration, and connectivity to the Internet.

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 126, CIS 127, CIS 128, CIS 132, CIS 136 and CIS 230

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 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 146 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 247 WEB PAGE DESIGN II (DREAMWEAVER®) (3 CR)

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 website.

Prerequisite: CIS 147

CIS 265 ANDROID DEVELOPMENT (3 CR)

In this course, students will use the latest development languages for Android mobile application development. This course will introduce you to the basics of the Android platform, Android application components, activities and their lifecycle, UI design, multimedia, 2D graphics and networking support in Android. Prior programming experience is required.

Prerequisite: CIS 165

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.

Prerequisite: CIS 165 or CIS 170

CIS 274 3D MODELING (3 CR)

Students will begin learning the basic low polygon modeling techniques in appropriate software. Special emphasis on character design and environmental modeling will be the key to this class along with a flow into topics of topology. This course is perfect for an artist or technically minded individual.

Prerequisite: CIS 134

CIS 279 METHODS IN LIGHTING AND TEXTURING (3 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.

Prerequisites: CIS 134 and CIS 274

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COMMUNICATIONS (COM)**COM 231 COMMUNICATION FUNDAMENTALS (3 CR)**

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.

COM 231A COMMUNICATION FUNDAMENTALS (3 CR)

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.

Corequisite: ENG 086

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)

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.

COM 240 INTERPERSONAL COMMUNICATION (3 CR)

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.

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.

COM 251 INTERCULTURAL COMMUNICATION - IMMERSIVE (3 CR)

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 will include a mandatory travel study experience organized by Jackson College.

COM 260 SMALL GROUP COMMUNICATION (3 CR)

In this course, students will examine small group communication theories and processes by observing and participating in group activities. As group members, students will apply communication theory to enhance their effectiveness as members and leaders.

Prerequisite: COM 231 or COM 240

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 240 and ENG 131

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COMPUTER NETWORKING AND SECURITY (CNS)

CNS 101 NETWORK FUNDAMENTALS/NETWORK+ (4 CR)

This course introduces students to fundamental networking concepts and technologies. This course is the first of three 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 will also help prepare students for the CompTIA Network+ certification exam.

CNS 106 COMPUTER NETWORKING II (4 CR)

This course covers the architecture, components, and operations of routers and switches in a small network. Students learn how to configure routers and switches for basic functionality. This course is the second of three courses that help prepare students for the Cisco CCNA certification exam.

Prerequisite: CNS 101

CNS 107 COMPUTER NETWORKING III (4 CR)

This course covers the architecture, components, and operations of routers and switches in larger and more complex networks. Students learn how to configure routers and switches for advanced functionality. This course is the third of three courses help prepare students for the Cisco Certified Network Associate (CCNA) certification exam.

Prerequisite: CNS 106

CNS 108 COMPUTER NETWORKING IV (4 CR)

This course discusses the WAN technologies and network services required by converged applications in a complex network. The course enables students to understand the selection criteria of network devices and WAN technologies to meet network requirements. This course is the fourth of a four-course sequence that helps students prepare for the Cisco Certified Network Associate (CCNA) Routing and Switching certification.

Prerequisite: CNS 106

CNS 121 MICROSOFT® NETWORKING CLIENT I (3 CR)

This course will help students gain the knowledge and skills required to configure Microsoft 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 Microsoft 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 Microsoft 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.

Prerequisites: CNS 101 and CNS 121

CNS 124 MICROSOFT® NETWORKING SERVER II (3 CR)

This course covers planning Microsoft Windows Server 2008 roles; maintaining 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.

Prerequisites: CNS 123

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 131

CNS 210 PYTHON SCRIPTING FOR SECURITY (3 CR)

This course covers an overview of Python, including how to create and run scripts, use threads, and handle exceptions. It will progress on how to network, including using Python libraries for networking scripting and developing basic scripts with network functionality. HTTP programming and client, security scripting, Twisted Python, the Echo server, and forensic scripting are also covered. The course emphasizes debugging capability and security testing using Python.

Prerequisite: CNS 101

CNS 221 SECURING MICROSOFT® NETWORKS (3 CR)

This course will cover how to protect your Microsoft Windows-based clients, server roles, networks and Internet services. Students learn how to plan and implement comprehensive security with special emphasis on new Microsoft 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 123

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.

Prerequisite: CNS 131

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 201

CNS 245 INTERNSHIP/EXTERNSHIP (3 CR)

The student will have meaningful work experience related to computer networking and security with an appropriate organization. The organization and position must be approved by supervising faculty member.

Prerequisite: Instructor permission required

CNS 251 CLOUD COMPUTING (3 CR)

This course covers the widest spectrum of topics starting from Classic Data Center to IT-as-a-Service. It provides a strong foundation for the understanding of virtualization and cloud computing technologies. You will learn about the transition from classic data center to virtualized data center to cloud computing. This would encompass virtualization technologies at computer, storage, network, desktop, and application level as well as cloud building blocks, which are created on virtualized infrastructure. The course emphasizes deployment models, business continuity solutions, infrastructure, service management and security in a cloud environment.

Prerequisite: CNS 101

CNS 252 VIRTUALIZATION I (3 CR)

This course features intensive hands-on training that focuses on installing, configuring, and managing VMware vSphere®, which includes VMware ESXi™ and VMware vCenter Server®. This course prepares you to administer a vSphere infrastructure for an organization of any size. It is the foundation for most other VMware technologies in the software-defined data center.

Prerequisite: CNS 101

CNS 253 VIRTUALIZATION II (3 CR)

This course will teach you advanced skills for configuring and maintaining a highly available and scalable virtual infrastructure. Through a mix of lecture and hands-on labs, you will configure and optimize the VMware vSphere® features that build a foundation for a truly scalable infrastructure, and you will discuss when and where these features have the greatest effect. This course will deepen your understanding of vSphere and how its advanced features and controls can benefit your organization. *Prerequisite: CNS 252*

CNS 254 INFORMATION STORAGE AND MANAGEMENT (3 CR)

This course provides a comprehensive understanding of the various storage infrastructure components in data center environments. It enables participants to make informed decisions on storage-related technologies in an increasingly complex IT environment, which is fast changing with the adoption of software-defined infrastructure management and third platform technologies (cloud, Big Data, social, and mobile technologies). Participants will learn about storage networking technologies such as FC SAN, IP SAN, and FCoE SAN; backup and replication; the highly critical area of information security; and storage infrastructure management.

Prerequisite: CNS 101

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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.

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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.

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.

CRJ 104 CRIMINAL JUSTICE PSYCHOLOGY (3 CR)

This course is an overview of criminal behavior from a psych-social perspective. Contemporary research, theory and practice concerning the psychology of crime are reviewed.

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.

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.

CRJ 114 POLICE ADMINISTRATION & OPERATIONS (3 CR)

Administration and operation of a police department including line/staff activities are explored.

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.

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.

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.

CRJ 121 INTRODUCTION TO CORRECTIONS (3 CR)

A survey of the American corrections system as a component of the criminal justice system.

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.

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.

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.

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 grade point average and permission of the instructor.

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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

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DENTAL HYGIENE (DHY)

DHY 101 PRINCIPLES IN DENTAL HYGIENE I (2 CR)

This course introduces the profession of dental hygiene, the dental hygiene code of ethics, principles of infection and exposure control and the CDC Bloodborne Pathogens Standard. Fundamental concepts on dental hygiene process of care including patient management, dental hygiene diagnosis, oral health education techniques, and disease prevention strategies will be discussed. Additionally, dental instrumentation and oral deposits are discussed.

Prerequisite: Admission into the DENT.AAS program

Corequisites: DHY 102, DHY 103, DHY 104 and DHY 105

DHY 102 PRECLINICAL DENTAL HYGIENE (2 CR)

The principles, protocols, and components learned in DHY 101 will be performed in this clinical setting with an introduction in dental hygiene procedures, basic instrumentation, and development of manual dexterity, dental charting, and preventive education.

Prerequisite: Admission into the DENT.AAS program

Corequisites: DHY 101, DHY 103, DHY 104 and DHY 105

DHY 103 HEAD, NECK AND ORAL ANATOMY (3 CR)

This course is designed for first-semester dental hygiene students. The topics include anatomy of the teeth and dental nomenclature, the development, eruption, function, and morphological characteristics of the human deciduous and secondary dentition, and a review of the bones and muscles of the orofacial complex. This examination of the temporomandibular joint and function, and dental occlusion classification will complete this course.

Prerequisite: Admission into the DENT.AAS program

Corequisites: DHY 101, DHY 102, DHY 104 and DHY 105

DHY 104 BIOCHEMISTRY & NUTRITION (2 CR)

This course provides dental hygiene students with an overview of nutrition biochemistry, nutritional guidelines, diet analysis and planning. The role of nutrition in dental health and systemic diseases are emphasized along with the clinical application of nutritional counseling strategies.

Prerequisite: Admission into the DENT.AAS program

Corequisites: DHY 101, DHY 102, DHY 103, and DHY 105

DHY 105 MEDICAL EMERGENCIES IN THE DENTAL OFFICE (1 CR)

Familiarity with critical steps in prevention, preparation, early recognition, and appropriate management of common medical emergencies in the dental office.

Prerequisite: Admission into the DENT.AAS program

Corequisites: DHY 101, DHY 102, and DHY 104

DHY 111 PRINCIPLES IN DENTAL HYGIENE II (2 CR)

The development of a theoretical framework of dental hygiene treatment to begin attainment of proficiency in all areas of dental hygiene treatment. Presentation and discussion of case histories from patients and preventive measures employed against disease with emphasis on special needs patients.

Prerequisites: DHY 101, DHY 102, DHY 104 and DHY 105

Corequisites: DHY 112, DHY 113 and DHY 114

DHY 113 DENTAL RADIOLOGY (3 CR)

This course is designed to provide the student with the theory and procedures used in dental radiography. Topics include history of the dental x-rays, radiation safety, and film exposure techniques, processing and mounting of radiographs, radiographic findings and patient management.

Prerequisites: DHY 101, DHY 102, DHY 104 and DHY 105

Corequisites: DHY 111, DHY 112, and DHY 114

DHY 114 PERIODONTOLOGY (3 CR)

This course is designed to provide advanced study of the periodontium and its relationship to the pathogenesis of periodontal disease. It focuses on the relationships between periodontal disease, systemic health, prevention, risk assessments, classifications, current modalities of treatment and management strategies.

Prerequisites: DHY 101, DHY 102, DHY 104 and DHY 105

Corequisites: DHY 111, DHY 112 and DHY 113

DHY 115 PERIODONTOLOGY (3 CR)

The principles, protocols and components of dental hygiene process of care are introduced in this clinical setting emphasizing patient care. The development of skills includes ultrasonic instrumentation, case management, treatment planning and dental hygiene prevention services.

Prerequisites: DHY 101, DHY 102, DHY 103, DHY 105 AND DHY 113

Corequisites: DHY 104, DHY 111, DHY 114, AND DHY 121

DHY 120 DENTAL MATERIALS (2 CR)

This course is designed for dental hygiene students and is the study of dental materials including their biological, physical, mechanical and chemical properties. The lab portion of this course includes proper manipulation and technique, handling, and storage of dental materials. The course is designed to discuss commonly used dental products.

Prerequisites: DHY 111, DHY 112, DHY 113 and DHY 114

Corequisites: DHY 121 and DHY 122

DHY 121 PHARMACOLOGY FOR THE DENTAL HYGIENIST (2 CR)

Classifications and varieties of drugs, pharmacologic effects, adverse reactions, usual indications and contraindications. Discussion of drugs utilized to treat common diseases. Pharmacokinetics of local and general anesthetic agents and their use.

Prerequisites: DHY 111, DHY 112, DHY 113 and DHY 114 • Corequisites: DHY 120 and DHY 122

DHY 201 PRINCIPLES IN DENTAL HYGIENE III (2 CR)

Continued development of a theoretical framework of dental hygiene treatment with advancement of dental hygiene proficiency in all areas of dental hygiene treatment. Presentation and discussion of case histories from patients and preventive measures employed against disease with emphasis on special needs patients.

Prerequisites: DHY 120, DHY 121 and DHY 122

Corequisites: DHY 202, DHY 203 and DHY 204

DHY 203 PAIN MANAGEMENT (2 CR)

This course will provide the student with basic and current concepts of local anesthesia and pain control for the safe and effective administration of local anesthesia and nitrous oxide/oxygen sedation. Instruction in local anesthetic technique and an introduction to the use of nitrous oxide as an analgesia is included. Successful completion of this course confers eligibility to take the CDCA exams for Local Anesthesia and Nitrous Oxide/Oxygen sedation with program director approval.

Prerequisites: DHY 120, DHY 121 and DHY 122

Corequisites: DHY 201, DHY 202 and DHY 204

DHY 204 ORAL PATHOLOGY (2 CR)

This course is designed for dental hygiene students. The topics incorporate important concepts in general pathology and their relationship to the oral cavity. Fundamental concepts stress comprehensive oral examination procedures, disease recognition, and identification of pathological conditions that affect the patient's systemic health in relation to the oral cavity.

Prerequisites: DHY 120, DHY 121 and DHY 122

Corequisites: DHY 201, DHY 202 and DHY 203

DHY 205 CLINICAL DENTAL HYGIENE II (3 CR)

The principles, protocols and components of dental hygiene process of care are continued in this clinical setting emphasizing patient care. The continued advancement of skills includes non-surgical periodontal treatment, ultrasonic instrumentation, case management, treatment planning and dental hygiene prevention services.

Prerequisites: DHY 104, DHY 111, DHY 115, AND DHY 121

Corequisites: DHY 120, DHY 201, DHY 203, AND DHY 204

DHY 211 PRINCIPLES IN DENTAL HYGIENE IV (2 CR)

Ethics, jurisprudence, and practice management concepts, including a study of state practice acts and business management procedures. Comprehensive review of formats and procedures involved in national, regional and state board examinations. Guidance will be given in developing employment-seeking skills, including résumé writing. The course includes case-based study questions relative to dental hygiene with emphasis on content and test-taking strategies.

Prerequisites: DHY 201, DHY 202, DHY 203 and DHY 204

Corequisites: DHY 212 and DHY 213

DHY 213 COMMUNITY DENTAL HEALTH (2 CR)

This course is designed for the dental hygiene student to review the history, philosophy, administration and current events of community oral health. Topics include emphasis on health promotion, epidemiology of dental disease, community service, designing, implementing and assessing a community health project.

Prerequisites: DHY 201, DHY 202, DHY 203 and DHY 204

Corequisites: DHY 211 and DHY 212

DHY 215 CLINICAL DENTAL HYGIENE III (4 CR)

The principles, protocols and components of dental hygiene process of care are continued in this clinical setting emphasizing patient care. The continued advancement of skills includes non-surgical periodontal treatment, ultrasonic instrumentation, case management, treatment planning and dental hygiene prevention services.

Prerequisites: DHY 120, DHY 201, DHY 203, DHY 204 AND DHY 205

Corequisites: DHY 211 AND DHY 213

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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 102 VASCULAR ANATOMY, PHYSIOLOGY, AND PATHOPHYSIOLOGY (3 CR)

In this course, anatomy of the venous, arterial, microcirculation, and anatomic variants of the body is introduced. The abdominal structures associated with the vasculature is explored. In this course, normal function of the venous and arterial systems, abnormal mechanisms, risk factors, and indications of arterial and venous disease associated with a range of pathological conditions will be covered.

Prerequisite: Acceptance into VSON program

DMS 103 INTRODUCTION TO SONOGRAPHIC REASONING AND RESEARCH (2 CR)

In this course, students are introduced to the sonographic reasoning method framework. Using analytical framework, students will be provided a fundamental approach to critical thinking and problem solving associated with vascular ultrasound examinations. This course explores basic research steps and the importance of contributing to sonography education and becoming lifelong learners. Students will become members of the Society of Vascular Ultrasound and begin exploring the process for writing abstracts and journal articles.

Prerequisite: Acceptance into VSON 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: 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 will attend a 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.

Prerequisite: Acceptance into the DMS program.

Corequisites: DMS 140 and DMS 141

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. 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 will attend a 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.

Prerequisite: DMS 142

Corequisite: DMS 144

DMS 160 INTRODUCTION TO VASCULAR TECHNOLOGY AND PROFESSIONAL LAB PRACTICE (3 CR)

In this course, students are introduced to and practice the Intercostal Accreditation Commission (IAC) exam testing protocols of the venous duplex obstruction testing, carotid duplex testing (including manual blood pressure measurements) and ABI exam. The routines of the daily lab are simulated using various in-patient scenarios and outpatient scenarios. Students are introduced to practice oral communication in a concise, clear, and intelligent manner with students, faculty and staff. Students actively explore ultrasound equipment and scanning techniques. The appropriate use of color, pulse-wave Doppler, and gray-scale settings is applied to obtain optimal images and Doppler waveform patterns. Students are assessed for proper ergonomics while manipulating the transducer and scanning in the transverse to sagittal scan plans. HIPAA, OSHA, blood-borne, University Precautions, and basic patient transfer techniques are practiced. The affective, cognitive and psychomotor skills are also assessed in this course.

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 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 202 BASIC CARDIOVASCULAR PRINCIPLES, HEMODYNAMICS AND DOPPLER WAVEFORMS (3 CR)

In this course, students are introduced to math equations and the relationship of variables to the physics of normal and abnormal blood flow patterns. Basic fluid properties of the venous and arterial systems are defined. The Doppler Effect and color Doppler imaging are also introduced in this course. The use of the Doppler equation is used to show how the Doppler spectrum is formed. Measurement of the Doppler waveform are covered and artifacts that may occur are explained.

Prerequisite: Acceptance into VSON program

DMS 203 VENOUS DUPLEX TESTING (3 CR)

In this course, theories, techniques and venous testing procedures of the lower and upper extremity exams are covered. Other topics will include: differential diagnosis; other imaging modalities; identifying deep vein thrombosis; advanced exploration of venous anatomy and collateral pathways; pathology & pathophysiology; Color Doppler & PW Doppler waveforms techniques & principles; preliminary writing. Assessment of these skills will occur in this didactic course and applied in the clinical course work.

DMS 205 ARTERIAL DUPLEX AND PHYSIOLOGICAL TESTING (3 CR)

In this course, theories, techniques and arterial testing procedures of the lower and upper extremity duplex and physiological exams are covered. Other topics include: bypass graft imaging; differential diagnosis; other imaging modalities; advanced exploration of arterial anatomy and collateral pathways; pathology and pathophysiology; techniques and principles of color, PW, CW Doppler waveforms;

preliminary writing. Assessment of these skills will occur in this didactic course and applied in the clinical coursework.

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 207 CEREBROVASCULAR PROCEDURES (3 CR)

In this course, theories, techniques and testing procedures (imaging and non-imaging) of the extracranial and intracranial exams are covered. Topics include: differential diagnosis; other imaging modalities; tests of accuracy; advanced exploration of arterial anatomy; collateral pathways, pathology and pathophysiology; techniques and principles of color and PW Doppler waveforms; preliminary writing. Assessment of these skills will occur in this didactic course and applied in the clinical coursework.

DMS 208 ADVANCED IMAGING (3 CR)

In this course, theories, techniques and testing procedures of the abdomen and post-operative exams are covered. Topics will include: post-operative procedures (abdominal, carotid, lower and upper extremities); abdominal arterial and venous visceral and aortic-iliac arterial disease using duplex ultrasound. Advanced exploration of abdominal arterial and venous anatomy, pathology & pathophysiology; Color Doppler, PW Doppler waveforms techniques and principles; preliminary writing. Assessment of these skills will occur in this didactic course and applied in the clinical course work.

DMS 209 VASCULAR TECHNOLOGY REVIEW CAPSTONE (4 CR)

This course is a 7-week learning plan designed to immerse students in lessons on how to learn, test-taking strategies, answer contextual style questions, and build a deeper understanding of the arterial and venous vascular system, disease processes, pathology and pathophysiology. The interactive comprehensive-progressive learning plan is created for various learning styles and is designed to prepare students for the rigors and endurance needed to complete the registry exam. The content on the course follows the American Registry of Diagnostic Medical Sonography (ARDMS) application and testing outlines. The learning plan includes an exam date. A computerized, 200-question mock exam is administered at the end of the program.

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 their studies 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 studied. Students will 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.

Prerequisite: DMS 144

Corequisite: DMS 244

DMS 244 ECHO CLINICAL III (6 CR)

In this course, students will attend a 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.

Prerequisite: DMS 148

Corequisite: DMS 240

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.

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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 and MAT 040* 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.

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**

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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 086, ENG 091* and MAT 131 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 086, ENG 091* and MAT 131 or higher*

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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.

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.

Prerequisite: 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.

Prerequisite: ENG 131

EDU 263 CHILD GROWTH & DEVELOPMENT (3 CR)

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 (EIF) 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.

*Prerequisite: MAT 020**

EGY 110 CLIMBING CLINIC (0.5 CR)

This course will introduce students to pole climbing safety and techniques for lineworkers.

EGY 111 CLIMBING ORIENTATION (1.5 CR)

This course will provide students with further instruction in pole climbing, including equipment maintenance and different climbing techniques, rescues, and knot-tying.

Prerequisite: EGY 110

EGY 112 CLIMBING SCHOOL (7 CR)

This course will help students achieve mastery of climbing techniques through practice and refinement under the supervision of climbing instructors.

Prerequisite: MFG 135, ELT 106, EGY 101, EGY 110, EGY 111, HPF 186, OR INSTRUCTOR APPROVAL

EGY 220 ENERGY INDUSTRY EXPERIENCE

This is a field-based course that includes tours of power production, transmission and distribution facilities with guided conversation and reflection. Prepares students for internship selection.

Prerequisite: EGY 101

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.

Prerequisites: 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, cyber security, micro grids 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 degree. 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

ENGLISH LANGUAGE INSTITUTE (ELI)

ELI 031 INTERMEDIATE SPEAKING AND LISTENING (4 CR)

This course is designed for non-native speakers of English with an emphasis on the development of speaking/listening skills at the intermediate level.

ELI 032 INTERMEDIATE READING AND VOCABULARY (4 CR)

This course is designed for non-native speakers of English with an emphasis on the development of reading and vocabulary at the intermediate level.

ELI 033 INTERMEDIATE WRITING (4 CR)

This course is designed for non-native speakers of English with an emphasis on the development of writing skills at the intermediate level.

ELI 034 INTERMEDIATE GRAMMAR (4 CR)

This course is designed for non-native speakers of English with an emphasis on the development of grammar skills at the intermediate level.

ELI 041 PRE-ADVANCED SPEAKING AND LISTENING (4 CR)

This course is a communicative speaking/listening course that focuses on higher-level usage of speaking skills necessary for success in academic settings. Students will practice more with listening for the main idea, listening for details as well as improving their speaking skills in discussions, debates and critical thinking.

ELI 042 PRE-ADVANCED READING AND VOCABULARY (4 CR)

Reading strategies and vocabulary building are developed in this level. Students will read about academic topics such as business, psychology, nutrition, medicine, literature and sociology. Key reading strategies are emphasized for future success in college-level courses.

ELI 043 PRE-ADVANCED WRITING (4 CR)

Level 4 Writing is the introduction to the academic essays. Students will first review the structure of a paragraph with emphasis on unity, coherence and using outside sources. Then, students will learn the basic features of an essay and write three essay types: cause/effect, comparison/contrast and argumentative. Deeper development of critical thinking skills is taught throughout the course.

ELI 044 PRE-ADVANCED GRAMMAR (4 CR)

Review of grammar features covered in the previous levels (Level 1-3) is made with further practice with the perfect simple and perfect progressive tenses and other new grammatical structures.

ELI 051 ADVANCED SPEAKING AND LISTENING (4 CR)

Students continue to learn and master the skills of participating in and leading academic classroom discussions in a culturally, pragmatically appropriate way. More advanced complex topics are discussed at this level with practice on giving speeches, agreeing/disagreeing with others, identifying strong and weak arguments and supporting arguments with external sources.

ELI 052 ADVANCED READING AND VOCABULARY (4 CR)

This course focuses on improving reading fluency through reading a high-level reading textbook combined with authentic texts. Reinforcement of the reading strategies is made continuously throughout the semester.

ELI 053 ADVANCED WRITING (4 CR)

This course provides students with the strategies and skills needed to write and edit a variety of different essay types such as: classification, process, cause/effect, problem/solution, summary/response, argumentative and research papers. How to find credible sources of information and accurate use of APA and MLA style are emphasized.

ELI 051 ADVANCED GRAMMAR (4 CR)

This course continues to build on grammatical features from ELI 044 with the additional of the passive voice, noun clauses, adjective clauses, gerunds and infinitives, coordinating conjunctions, adverb clauses and conditional structures.

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ELECTRONIC TECHNOLOGY (ELT)**ELT 106 BASIC ELECTRICITY AND FLUID SYSTEMS (3 CR)**

This course will cover the principles of basic electrical, hydraulic, and pneumatic circuits. Students will learn how to identify components of electrical and fluid circuits, how to analyze circuits, and how to troubleshoot electrical systems. At the end of the course they will be able to take the Certified Production Technical Maintenance Awareness exam.

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.

Prerequisite: MAT 040 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.

Prerequisite: MAT 040 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.

Prerequisite: MAT 040 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 106 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

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EMERGENCY MEDICAL SERVICES (EMS)

EMS 123 EMT BASIC TECHNOLOGY (12 CR)

The Basic Emergency Medical Technician course is approved by the Michigan Department of Health and Human Services. This program provides the information and experience necessary to prepare the student to sit for the National Registry EMT Basic 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, twelve-hour experiences in the hospital emergency room setting and with a pre-hospital life support agency. Laboratory and clinical experiences are included.

Corequisites: EMS 1230 (Lab) and EMS 1231 (Clinical)

EMS 180 PARAMEDIC ADVANCED I (5 CR)

This course is designed to prepare the student for licensure as a 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 Health and Human Services, and Jackson County Medical Control Authority.

Prerequisites: EMS 123, 1230, AND 1231, OR PROOF OF EMT-B LICENSE

EMS 182 PARAMEDIC PHARMACOLOGY I (2 CR)

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 prehospital setting. Concentration will focus on cardiovascular drugs in this semester.

Prerequisites: EMS 123, 1230, AND 1231, OR PROOF OF EMT-B LICENSE

Corequisites: BIO 132

EMS 183 PARAMEDIC CARDIOLOGY I (2 CR)

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 Health and Human Services, 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.

Prerequisites: EMS 123, 1230, AND 1231, OR PROOF OF EMT-B LICENSE

Corequisites: BIO 132

EMS 184 PARAMEDIC ADVANCED LIFE SUPPORT (2 CR)

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.

Prerequisites: EMS 123, 1230, AND 1231, OR PROOF OF EMT-B LICENSE

Corequisites: BIO 132

EMS 187 PARAMEDIC SKILL LAB (2 CR)

The EMT-Paramedic represents an advanced level of skills in the emergency medical system. Coursework typically emphasizes emergency skills such as managing respiratory, trauma, and cardiac emergencies. The program reviews all material covered in EMT-Basic and includes more advanced training in acid-base balance, intravenous access and maintenance, pharmacology, cardiology and advanced airway management skills. Along with the hands-on skills learned in this class the Paramedic candidate will also build the on their ability to work as a team and oversee operations while serving in the team leader role. One must be able to recognize that most EMS agencies utilize small groups to handle the daily activities of a paramedic. This course measures the ability to work in small groups through an affective behavior domain evaluation as noted below.

Perquisites: EMS 123, 1230, AND 1231, OR PROOF OF EMT-B LICENSE

Corequisites: BIO 132

EMS 188 PARAMEDIC CLINICAL I (1 CR)

This course is designed to provide the first semester clinical hours necessary to meet the requirements of the Michigan Department of Health and Human Services 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 123, 1230, AND 1231, OR PROOF OF EMT-B LICENSE

Corequisites: BIO 132

EMS 190 PARAMEDIC ADVANCED PRACTICE II (5 CR)

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 180, 187, 188, 182, 183, AND 184

EMS 192 PARAMEDIC PHARMACOLOGY II (2 CR)

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 180, 187, 188, 182, 183, AND 184

EMS 193 PARAMEDIC CARDIOLOGY II (2 CR)

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.

Prerequisites: EMS 180, 187, 188, 182, 183, AND 184

EMS 194 PARAMEDIC ADVANCED PRACTICE III (2 CR)

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 180, 187, 188, 182, 183, AND 184

EMS 197 PARAMEDIC SKILL LAB II (2 CR)

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 180, 187, 188, 182, 183, AND 184

EMS 198 PARAMEDIC CLINICAL II (1 CR)

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 the progress of the students.

Prerequisites: EMS 180, 187, 188, 182, 183, AND 184

EMS 245 PARAMEDIC CLINICAL INTERNSHIP (4 CR)

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 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 t
his class. In addition, classroom time is scheduled to review clinical procedures and review student
progress. This course includes up to eight hours of medical simulation to help achieve any missing
paramedic competencies.

Prerequisites: Instructor permission

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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 freehand 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, 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 151

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 086 ACTIVE READING (3 CR)

Using a wide range of reading materials, students will employ metacognitive processes to enhance
understanding and will find connections between a text and their own lives, the world, and other texts.
They will also learn and practice strategies for expanding vocabulary. Student writing is a significant
component of the course.

ENG 091 INTRODUCTION TO COLLEGE WRITING (3 CR)

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.

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 086 and ENG 091**

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 086**

Corequisite: ENG 091

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 paper is required. Additionally, all students enrolled in this course work as tutors in the Writing Center.

Prerequisite: Instructor permission required

ENG 210 FILMS AS LITERATURE (3 CR)

Students analyze films as texts by learning to evaluate the story structure of different films and how a film's visual elements work to enhance the story. Students also examine the cultural and societal impact of films. Readings include the narrative structure of films, cultural impact, and film techniques. Includes Jackson College Winter Film Series.

Prerequisite: 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.

Prerequisite: ENG 131

ENG 242 SPORTS IN FILM AND LITERATURE (3 CR)

This course is an inquiry into historical and changing role of sports in American culture through novels, essays, biographies, films, documentaries and sports-related poetry.

Prerequisite: 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.

Prerequisite: 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.

Prerequisite: 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.

Prerequisite: 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.

Prerequisite: 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.

Prerequisite: 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.

Prerequisite: 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.

Prerequisite: ENG 131

ENG 257 WORLD LITERATURE I (3 CR)

Students compare major themes and writers from Africa, America, Asia and Europe.

Prerequisite: 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.

Prerequisite: 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

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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.

*Prerequisite: CIS 095**

ENT 102 ENTREPRENEURIAL MARKETING: FINDING YOUR NICHE (3 CR)

This course focuses on the development and market validation of a business model that students proposed and began analyzing in ENT 101. Students will conduct primary market research by studying prospective customers in the environments in which purchase decisions are most likely to be made. Using the structure of Business Model Canvas, students will revise their business concepts based on their market research, identifying clear market segments and value propositions which provide students with a competitive advantage increasing the likelihood of building viable businesses.

*Prerequisite: CIS 095**

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.

Prerequisite: ENT 102

ENT 245 Internship/Externship (3 CR)

The student will have meaningful work experience with an appropriate organization and/or a trip exploring entrepreneurship in another county. The internship and/or trip must be approved by the supervising faculty member.

Prerequisite: Instructor Permission Required

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FIRST YEAR SEMINAR (FYS)

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 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 Project will be completed, and academic success strategies are introduced and reinforced throughout the course.

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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.

FRN 132 ELEMENTARY FRENCH II (4 CR)

Provides increased practice in the basic language skills: listening, speaking, reading and writing.

Prerequisite: FRN 131

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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.

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.

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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.

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.

GEO 133 PHYSICAL GEOGRAPHY LAB (2 CR)

The physical geography laboratory covers basic physical elements of the environment and their regional and global distribution. Topics include an understanding of the interplay of the atmosphere, hydrosphere,

lithosphere, biosphere, and cryosphere in areas of study that include seasons, weather, climate, landscape formation, distribution of plants and animals.

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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.

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

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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 Samaria to the end of the ancient world when the Western Roman Empire faded out of sight in 476 A.D.

HIS 125 AFRICAN-AMERICAN HISTORY (3 CR)

Examines the role African-Americans have historically played in the political, economic and social construction of America.

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 humankind from the beginning to the 16th century.

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.

HIS 211 MINORITY GROUPS IN AMERICA (3 CR) (Formerly SOC 235)

History of dominant-minority relations in contemporary American society. Attention to specific ethnic, religious, and racial minorities in terms of prejudice and discrimination.

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.

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.

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.

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HEALTH OCCUPATIONS (HOC)

HOC 110 CPR AND ADVANCED FIRST AID (2 CR) (Previously EMS 110)

This course leads to certification in First Aid through the American Academy of Orthopedic Surgeons American College of Emergency Physicians and the American Heart Association Healthcare Provider CPR and AED course. The course will prepare students to recognize when an emergency exists and how to properly care for the patient until professional help arrives.

HOC 115 INTRODUCTION TO PATIENT CARE (3 CR)

This course will prepare students to provide basic bedside care in a patient home setting. Students who complete this course may find positions as a Patient Companion or Homemaker/Home Health Aide. Topics include an overview of common diseases and conditions of home care patients, infection control, vital signs, providing personal care, and collecting specimens for testing. This course alone does not prepare students for an industry recognized credential but is a requirement of the Patient Care Tech Certificate program.

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.

HOC 140 PHARMACY TECHNICIAN 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 Exam (PTCE) included.
Prerequisites: MAT 130 or higher

HOC 145 PHLEBOTOMY TECHNICIAN (4 CR)

This course will prepare students for performing phlebotomy procedures in a variety of health care settings. Students will learn about the roles and responsibilities of the phlebotomist, which will include infection control procedures, legal and ethics 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.

HOC 150 ELECTRONIC HEALTH RECORDS SPECIALIST (3 CR)

This course provides students with skills necessary to work with electronic health records. This course is ideal for those currently working in the health field or those looking to enter into a health-related program who are hoping to learn more about key concepts and the use of electronic health records in the medical setting. Topics include the cost and needs to consider when implementing an EHR system, how to utilize an EHR system to meet government requirements and medical practice needs, and practical application of various EHR tasks. The course will also cover basic medical terminology and basic medical coding principles. Students who complete this course with a passing grade will be eligible to sit for the Certified Electronic Health Record Specialist exam.

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HEALTH & PHYSICAL FITNESS (HPF)

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 141 GROUP CYCLING (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.

HPF 161 PERSONALIZED FITNESS (1 CR)

A self-paced program in which students exercise independently in a supervised lab. Instructor’s guidance is available to develop an individualized plan to achieve personal health and fitness goals.

HPF 168 WEIGHT TRAINING AND CONDITIONING (2 CR)

Includes both didactic and practical application of the principles of comprehensive exercise. Learn about the multidimensional components of exercise including cardiovascular, flexibility and body composition. Special focus is placed on muscular strength and endurance within the context of a wellness perspective.

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 173 SPORTS MATTERS (3 CR)

Students examine the changes and challenges in the field of sport and exercise today for the individual and society, including ethics and values, gender, ethnicity, leadership and politics.

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.

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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.

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

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MATHEMATICS (MAT)

MAT 019 RAPID REVIEW MATH (1 CR)

This course provides a rapid review of three pre-algebra: integers, fractions, and decimals. Placement testing and advising is included at the end of the review to determine the best math placement for the student for the remainder of the semester.

MAT 030 FOUNDATIONS OF MATH (4 CR)

This course is designed to prepare non-STEM major students for MAT 130, Quantitative Reasoning. Cultivates student skills in interpreting, understanding, and using quantitative information. Develops facility with numeracy, problem solving strategies, proportional and statistical reasoning through a quantitative literacy lens. Fosters skills in reading and writing quantitative information. Emphasizes critical thinking and the use of multiple strategies in applied contexts.

MAT 033 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.

Corequisite: MAT 133A

MAT 039 BEGINNING ALGEBRA (4 CR)

Students will build algebraic skills working with expressions and linear and quadratic equations. The course particularly emphasizes graphs and equations of lines, factoring techniques, methods of solving quadratic equations, and linear and quadratic modeling.

Prerequisite: Placement test only

Corequisite: MAT 131A

MAT 040 QUANTITATIVE REASONING FUNDAMENTALS (3 CR)

Quantitative Reasoning Fundamentals provides extra support for students concurrently enrolled in MAT 130 Quantitative Reasoning. The course will review mathematical topics needed to be successful in MAT

130, and will offer students the opportunity to review, ask questions, and receive additional help with the content of MAT 130.

Corequisite: MAT 130

MAT 130 QUANTITATIVE REASONING (4 CR)

Quantitative reasoning develops student skills in analyzing, synthesizing and communicating quantitative information. Cultivates algebraic reasoning and modeling skills through a quantitative literacy lens. Emphasizes critical thinking and the use of multiple strategies in applied contexts. Topics include proportional and statistical reasoning, probability, and evaluation of bias and validity.

Prerequisite: MAT 030 or MAT 040**

Corequisite: MAT 040

MAT 131 INTERMEDIATE ALGEBRA (4 CR)

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 131A INTERMEDIATE ALGEBRA (4 CR)

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.

This course is offered only as a corequisite to MAT 039.

Corequisite: MAT 039

MAT 133 INTRODUCTION TO PROBABILITY & STATISTICS (4 CR) (Same as 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 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 130* or higher*

MAT 133A INTRODUCTION TO PROBABILITY & STATISTICS (4 CR) (Same as MAT 133)

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. This course is offered only as a co-requisite to MAT 033.

Corequisite: MAT 033

MAT 135 FINITE MATHEMATICS (4 CR)

This course is for student 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 039 or MAT 131**

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 or MAT 131* or higher*

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)

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 is not 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)

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)

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 130 or higher*

MAT 211 FOUNDATIONS OF MATHEMATICS II (4 CR)

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)

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)

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

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MANUFACTURING TECHNOLOGY (MFG)

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 136

MFG 135 INDUSTRIAL SAFETY (3 CR)

This course demonstrates methods of maintaining a safe work environment. It introduces students to the best safety practices as well as communication and team building skills. Students will have the opportunity to take an MSSC certification exam as well as earn their OSHA 10 card.

MFG 136 BLUEPRINT READING AND PRECISION MEASUREMENT (3 CR)

This course will provide students with indepth knowledge of how to read blueprints and technical drawings, and use gauges to obtain precise measurements. Topics covered include print reading, measurement, tolerancing, and quality. Students may sit for the Certified Production Technician exam in Production Quality at the end of the course.

MFG 137 PRODUCTION PROCESS AND FABRICATION (3 CR)

This course will focus on production processes and machining, emphasizing planning, tooling, and materials. Students will learn the basics of safely operating machines and producing precision parts. Students may sit for the Certified Production Technician exam for Processes and Production at the end of the course.

Prerequisites: MFG 136

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 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.

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.

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 211 ROBOTIC OPERATIONS AND PROGRAMMING (3 CR)

This course introduces students to the fundamentals of robotic programming and operations. They will learn how to safely program and troubleshoot an industrial robot using a teach pendant.

Prerequisites: ELT 220

MFG 216 ROBOTIC APPLICATIONS AND MACHINE VISION (3 CR)

This course introduces students to the concept of Machine Vision, as well as more complex robotics programming applications.

Prerequisites: MFG 210

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

MFG 262 PRINCIPLES OF IIOT (4 CR)

This course introduces students to the principles of smart automation, networking, and the industrial internet of things (IIOT). Topics covered include networking, variable frequency drives, RFIDs, smart sensors, and databases.

Prerequisites: ELT 220

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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: MOA OR MED 120, MED 125, AND BIO 132/253 AND 254

MIC 141 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 health care finance issues, HIPAA and release of information guidelines are emphasized.

Prerequisites: MOA OR MED 120, MED 125, AND BIO 132/253 AND 254

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: MOA OR MED 120, MED 125, AND BIO 132/253 AND 254

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.

*Prerequisite: CIS 095**

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*

MIC 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.

Prerequisite: MIC 141

MIC 255 CODER/BILLER CAPSTONE (3 CR)

A student may choose to take the capstone instead of the practicum. In the capstone, you will not be performing hours at an external site, but rather perform extensive coding and billing exercises to prepare for the CPC exam, build a portfolio, and prepare for employment. Expect to spend approximately 10 hours a week minimum, outside of class time, working on assigned items.

Prerequisite: MIC 211 and instructor permission

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MEDICAL ASSISTANT (MED/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 health care programs, codes of ethics and contemporary bioethical issues.

MED 120 MA MEDICAL TERMINOLOGY (3 CR)

This course provides an overview of medical terminology to include word roots, prefixes, and suffixes, building of words using word parts, words not built from word parts, common medical abbreviations, and proper spelling and pronunciation of medical terms. This class is not required if a previous medical terminology course has been taken and passed with a 2.5 grade or higher.

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 are studied. Emphasis is placed on word building, definitions, spelling, usage, pronunciation and acceptable medical abbreviations.
*Prerequisite: ENG 085**

MED 125 INTRODUCTION TO BODY SYSTEMS (3 CR)

This course provides an overview of the anatomy of each body system in relation to the field of medical assisting.

MED 132 FOUNDATIONS OF CLINICAL PRACTICE (3 CR)

This course provides students with an introduction to the medical assistant profession along with basic clinical skills such as aseptic techniques and hand washing, OSHA & blood borne pathogen training, vitals, patient communication, along with nutrition and healthy living.
Prerequisites: MED 125 and MED 120/MOA 120

MED 135 MA PHARMACOLOGY AND MEDICAL MATH (2 CR)

The course covers the top 50 prescribed medications along with how to perform math conversions and dosage calculations.
Prerequisites: MED 125 and MED 120/MOA 120

MED 225 MA CLINICAL PROCEDURES I (4 CR)

This course will provide students with the clinical skills necessary to work in a medical practice. Topics will include preparing for exams, patient screening and assessment, cardiology and radiography procedures, physician office lab procedures, and phlebotomy.
Prerequisite: HOC 115 OR MED 132 OR CURRENT CNA LICENSE

MED 235 MA CLINICAL PROCEDURES II (4 CR)

In this course, students will learn the procedures and routines of specialty practices including well child examinations and immunizations, obstetrics/gynecology, geriatrics, administration of medications, along with emergency and surgical procedures.
Prerequisite: HOC 115 OR MED 132 OR CURRENT CNA LICENSE
Corequisite: MED 135

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.

Prerequisite: 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 health care finance issues, HIPAA and release of information guidelines are emphasized.

Prerequisites: MED 120/MOA120 and MED 125

MED 250 MA PRE-PRACTICUM CAPSTONE (2 CR)

This capstone course will assist in preparation for clinical practicum and completion of the MA program. Students will compile a portfolio and create a cover letter and resume to prepare for future employment, along with preparing for the CMA (AAMA) exam. Additionally, students will be evaluated for competency of skills learned in previous classes in a lab setting. Successful completion of this course is required to be eligible for the MA Clinical Practicum.

Prerequisites: MED 135, MED 225, AND MED 235

MED 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

MOA 255 HAIS PRACTICUM (3 CR)

The practicum is a non-paid practical experience in which the student is placed in a medical office, clinic, or hospital setting under the supervision of a health care practitioner for 180 hours total. The student has the opportunity to apply the knowledge and skill learned in the classroom in a real-life clinical situation. Depending on the placement, the student may perform medical office duties, coding/billing, or other administrative tasks learned in the program. The student will work with the program director to determine what type of practicum/placement they would prefer.

Prerequisites: MIC 211 and instructor permission required

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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 126 CONCERT CHOIR (2 CR)

Performance of choral music with enhanced emphasis on sight-reading skill, vocal production, and individual growth and musical contribution. Vocal Point is the varsity choral performing group, and as such operates in many ways like a varsity athletic organization. Professionalism and commitment to Vocal Point and Jackson College are expected at all times. Musical experience in high school choir is required as a prerequisite.

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.

MUS 131 UNDERSTANDING MUSIC (3 CR)

Lecture and directed listening on the elements, forms and historic chronology of Western music.

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 a historical context.

MUS 133 MUSIC EDUCATION (3 CR)

The 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 two 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 two 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 lessons taken for one credit, designed for music transfer students on secondary instruments, or recreational players looking to further their instrumental or vocal skills. Each face-to-face lesson will be 40 minutes, once per week, will include extra outside work, and require an end-of-semester recital performance combined with other private lesson students.

MUS 168 APPLIED MUSIC (1 CR)

Private lessons taken for one credit, designed for music transfer students on secondary instruments, or recreational players looking to further their instrumental or vocal skills. Each face-to-face lesson will be 40 minutes, once per week, will include extra outside work, and require an end-of-semester recital performance combined with other private lesson students.

Prerequisite: MUS 167

MUS 177 APPLIED MUSIC (2 CR)

Private lessons taken for two credits, designed for music transfer students on secondary instruments, or recreational players looking to further their instrumental or vocal skills. Each face-to-face lesson will be 60 minutes, once per week, will include extra outside work, and require an end-of-semester recital performance combined with other private lesson students.

Prerequisite: MUS 168

MUS 178 APPLIED MUSIC (2 CR)

Private lessons taken for two credits, designed for music transfer students on secondary instruments, or recreational players looking to further their instrumental or vocal skills. Each face-to-face lesson will be 60 minutes, once per week, will include extra outside work, and require an end-of-semester recital performance combined with other private lesson students.

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 237 JAZZ ENSEMBLE II (2 CR)

Available to students who have already taken Jazz Ensemble I. Offers enhanced requirements of improvisation and mentoring of local music programs. May be taken two times for credit.

Prerequisite: MUS 137

MUS 238 AFRICAN DRUM ENSEMBLE II (2 CR)

Available to students who have already taken African Drum Ensemble I, but with enhanced requirements. May be taken two times for credit.

Prerequisite: MUS 135

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 120 FUNDAMENTALS OF AGRICULTURAL SCIENCE (4 CR)

This course is designed for students in the agricultural science degree program. It provides an overview of important concepts in biology and chemistry. Chemistry topics include atomic structure, energy, and acid and base chemistry. Biology concepts include cellular structure and energy production, biotechnology, evolution, and ecology. These concepts will be expanded and applied in later courses in the program. Course includes a lab component.

Prerequisite: MAT 040 (course can be taken concurrently)*

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. Course includes a laboratory component.

Prerequisites: MAT 040 or higher*

NSC 141 SCIENTIFIC INQUIRY (3 CR)

An interdisciplinary science course that examines fundamental concepts in physics, chemistry, biology, and geology. Students deconstruct historically famous experiments in order to understand the scientific theories and methodologies as well as the nature of science itself.

NSC 141L SCIENTIFIC INQUIRY LAB (1 CR)

A hands-on investigative science laboratory course for non-science majors that emphasizes critical thinking and evidence evaluating skills. Students first explore the nature of science and the scientific method, and then apply these principles to design, conduct and interpret basic scientific research experiments in physics, chemistry, biology and geology.

Corequisite: NSC 141

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NURSING (NRS)

NRS 111 NURSING SKILLS (1 CR)

This course prepares students to safely and efficiently perform basic psychomotor nursing skills that are client-centered, culturally responsive and evidence-based. Classroom, laboratory and simulation experiences foster the development of clinical reasoning, a spirit of inquiry, and teamwork in preparation for the clinical experience.

Prerequisite: Admission into the NURS.AAS program

NRS 116 PHARMACOLOGY (3 CR)

This course introduces students to basic principles of drug actions and nursing implications within the framework of the nursing process. Students will develop clinical reasoning and drug computation skills necessary to safely administer medications in a culturally responsive, client-centered manner.

Prerequisite: Admission into the NURS.AAS program

NRS 119 HEALTH ASSESSMENT (3 CR)

This course prepares students to conduct evidenced-based, client-centered health assessments. Using a systematic and culturally responsive approach, the student will demonstrate safe assessment techniques and electronic health record documentation according to evidence-based practice. Classroom, laboratory and simulation experiences foster the development of clinical reasoning, a spirit of inquiry, and teamwork in preparation for the clinical experience.

Prerequisite: Admission into the NURS.AAS program

NRS 145 NORMAL/THERAPEUTIC NUTRITION (3 CR)

Basic nutritional concepts are presented with emphasis on application to patient care. Selected nutritional disorders and fundamentals of diet therapy are also included.

NRS 120 NURSING FUNDAMENTALS (4 CR)

This hybrid course introduces students to fundamental concepts of professional nursing, the nursing process, and advances with informatics. This course is designed to teach students the importance of evidence-based practice in providing client-centered and culturally responsive care. This course also examines the disease prevention and health maintenance programs available within the community while also addressing population health within assignments. Topics within this course include principles for building professional behaviors, advocating for the safety and well-being of clients, developing sound clinical reasoning, promote a spirit of inquiry, and build a strong foundation for a professional identity. Clinical experiences in the long-term care facilities and in community settings are designed to reinforce theory concepts, skills, and the nursing process.

Prerequisite: Admission into the NURS.AAS program

NRS 210 MEDICAL SURGICAL NURSING I (4 CR)

This course prepares the student to provide culturally responsive, safe, quality care while utilizing evidenced-based clinical reasoning that meets the educational and health promotion needs of the

medical-surgical client and their families. Clinical experiences, designed to reinforce theory, are included in the acute care setting.

Prerequisites: NRS 120, NRS 111, NRS 116, NRS 119

NRS 211 CARE OF WOMEN AND NEONATES (3 CR)

This course utilizes the nursing process to assist the student in collaborating with the client/family or other health care members to provide culturally responsive care during the childrearing experience. The student will address care issues from a physiological, pathophysiological, and psychosocial context using clinical reasoning to provide safe and quality care for women and neonates. Clinical experiences designed to reinforce theory are included in acute care clinical settings.

Prerequisites: NRS 120, NRS 111, NRS 116, NRS 119

NRS 212 BEHAVIORAL HEALTH (3 CR)

This course prepares the student to provide culturally responsive, safe, quality care utilizing clinical reasoning when caring for clients and their families with behavioral health needs. Clinical experiences, designed to reinforce theory, practice standards, and current research, are included in both the acute care and community settings. *Prerequisites: NRS 210, NRS 211, and NRS 215 or NRS 217 and NRS 218*

NRS 213 PEDIATRICS (3 CR)

This course explores Family Centered Care (FCC) concepts according to theories of growth and development to provide culturally responsive, safe, quality care utilizing clinical reasoning in the practice of primary preventative, acute and chronic nursing care of the pediatric patient population. Digital documentation techniques along with clinical experiences designed to reinforce application of theory, practice standards, and current research are included in both the acute care and community settings.

Prerequisites: NRS 210, NRS 211 and NRS 215

NRS 214 MEDICAL SURGICAL NURSING II (4 CR)

This course prepares the student to provide culturally responsive safe, quality care while utilizing clinical reasoning to the complex medical surgical clients and their families while reinforcing health promotion. Clinical experiences designed to reinforce theory are include in both acute care and community settings.

Prerequisites: NRS 212, NRS 213, and NRS 215 or NRS 217 and NRS 218

NRS 217 PATHOPHYSIOLOGY I (2 CR)

This course challenges student to apply the fundamental principles of pathophysiology in the management of the most relevant acute and chronic diseases within the framework of the nursing process. The student will use pathophysiology knowledge to develop sound clinical reasoning, promote a spirit of inquiry, and build a strong foundation for a professional identity. Systems covered include integumentary, musculoskeletal, neurological, digestive and urinary.

Prerequisites: NRS 120, 111, 116 and 119

NRS 218 PATHOPHYSIOLOGY II (2 CR)

This course challenges student to apply the fundamental principles of pathophysiology in the management of the most relevant acute and chronic diseases within the framework of the nursing process. The student will use pathophysiology knowledge to develop sound clinical reasoning, promote a spirit of inquiry, and build a strong foundation for a professional identity. Systems covered include endocrine and cardiovascular-pulmonary.

Prerequisite: NRS 217

NRS 230 MEDICAL SURGICAL NURSING III (4 CR)

This course prepares students to provide culturally responsive safe, quality, transitional care while utilizing nursing judgment to increasingly complex, critically ill, and/or multiple clients and their families. Clinical experiences designed to reinforce theory are included in both acute care and community settings.

Prerequisites: NRS 212, NRS 213, and NRS 214

NRS 240 NURSING CAPSTONE (3 CR)

This course prepares students for the transition from student to graduate nurse through synthesis and evaluation of current health care trends, legal and ethical processes, and evidence-based practice. Clinical preceptorships designed to integrate theory, practice and professional socialization are included.

Prerequisites: NRS 212 or 222, NRS 213 or 223, NRS 214 and NRS 230

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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?

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.

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.

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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.

Prerequisite: MAT 040 or higher*

PHY 145 INTRODUCTION TO BASIC PHYSICS (2 CR)

This course addresses the basic principles of classical physics specifically for the sonography program with a minimal amount of mathematics. The topics covered include motion, mechanics, energy, properties of matter, waves, heat, electricity and magnetism.

Prerequisite: MAT 040 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.

Prerequisite: 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.

Prerequisite: 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 in this 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.

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.

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PRACTICAL NURSING (PNC)**PNC 100 BODY STRUCTURE AND FUNCTION (4 CR)**

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 086**

PNC 110 FOUNDATIONS OF PRACTICAL NURSING (5 CR)

Students are introduced 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. Clinical experience provides the student an opportunity to demonstrate initial application of the roles of nursing judgment and professional identity in a highly structured, supervised setting.

Prerequisite: Admission into the PNCE.CERT program

PNC 111 FOUNDATIONS SKILLS LAB (1 CR)

This course introduces students to fundamental skills of practical nursing and the nursing process. The laboratory component will provide the student with visual demonstrations of procedures, as well as hands-on practice and group collaboration.

Prerequisites: Admission into the PNCE.CERT program

PNC 112 PRACTICAL NURSE PHARMACOLOGY I (2 CR)

This course introduces the PNC student to basic principles of drug actions and nursing implications within the nursing process framework. Students will develop safe medication practices and accurate drug dosage computation skills in a culturally sensitive, client-centered manner.

Prerequisite: PNC 111

Corequisite: PNC 110

PNC 113 PRACTICAL NURSE PHARMACOLOGY II (1 CR)

The student will explore the nursing process to understand the role of medications in relation to human disease, patient education, and disease management.

Prerequisite: PNC 112

Corequisite: PNC 120

PNC 120 MEDICAL-SURGICAL NURSING I (5.5 CR)

Students 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 these needs will be explored. Clinical experience will provide the student the opportunity to demonstrate the roles of nursing judgement and spirit of inquiry.

Prerequisites: PNC 110, PNC 1101 and PNC 111

PNC 130 MEDICAL-SURGICAL NURSING II (5.5 CR)

The 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 student the opportunity to demonstrate increasing organizational skills in their roles of nursing judgment and professional identity.

Prerequisites: PNC 120 and PNC 1201

PNC 140 MEDICAL-SURGICAL NURSING III (3 CR)

Students use the nursing process to implement the nursing role with adult clients experiencing basic physical (sensory, renal, reproductive, musculoskeletal, and mental health) conditions. Emphasis will be placed on the special needs of elderly clients. Understanding of how client's response to disease states alters the safety, love and belonging, and self-esteem needs will be explored. Interventions helpful to the care of the elderly will be included.

Prerequisites: PNC 130 and PNC 1301

PNC 150 MATERNAL/NEWBORN CONCEPTS (2 CR)

Students will extend the use of the nursing process to women, obstetric patients, and neonates. 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: PNC 140, PNC 170 and PNC 1701

PNC 160 PEDIATRIC CONCEPTS (2 CR)

Students will extend the use of the nursing process to children and childrearing clients. Maslow's hierarchy of human needs is utilized as a framework to care for the client who has a well-defined health care problem in a structured clinical setting.

Prerequisite: PNC 140

PNC 170 ENTRY INTO PRACTICE (2 CR)

Students will review the ethical/legal responsibilities of the licensed practical nurse along with the scope of practice of the LPN as defined by the Michigan Nurse Practice Act. 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.

Prerequisite: PNC 130

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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 086 and ENG 091**

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.

*Prerequisite: ENG 091**

Corequisite: ENG 086

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.

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 236 WOMEN IN A CHANGING SOCIETY (3 CR) (Formerly ENG 236/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.

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.

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.

Prerequisites: ENG 131 and PSY 140

.....**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 RAD 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

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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 101 INTRODUCTION TO RESPIRATORY CARE (2 CR)

The student in this course will be able to describe what a respiratory care practitioner does, where they work, the role of the respiratory care practitioner in patient care as well as to recognize the role of professional organizations in the career. Using a series of case studies, the student will identify HIPAA violations. The student will be introduced to medical abbreviations, calculations commonly used in respiratory care, normal values for vital signs and the normal chest x-ray, basic heart/lung anatomy and physiology, lung volumes and capacities, and blood gas interpretation.

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 204 DIAGNOSTIC THEORY (3 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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SEMINAR (SEM)

SEM 140 SEMINAR IN LIFE PATHWAYS (3 CR)

Seminar in Life Pathways (SEM 140) is the gateway course to Jackson College. This course is designed to help all students develop both the hard and the soft skills, the inner qualities and external behaviors needed to take charge of their academic and career success. Students will be guided through an extensive process in making career choices and selecting an academic program of study at Jackson College and beyond. With the exception of select second-admit programs, SEM 140 is required of all students. Students are expected to bring their own laptop or similar device for use in the course. Please view the Jackson College website, www.jccmi.edu/tbz, for technical specifications.

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SOCIAL WORK (SWK)

SWK 292 INTRODUCTION TO SOCIAL WORK (3 CR)

An introduction to the social work profession, code of ethics, values and social welfare policy. This is an examination of the profession's responsibilities in correlation to the populations served. This includes a history of social work as well as the role of the social work profession and different settings of practice.

Prerequisite: PSY 140 or SOC 231

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SPORT MANAGEMENT (SMT)

SMT 100 INTRODUCTION TO SPORT MANAGEMENT (3 CR)

Students will explore careers in the sport industry, both in the U.S. and globally, inclusive of professional, collegiate, youth, and non-profit sport, as well global branding, sponsorships, merchandising and entertainment events. Using the sports industry perspective, many business principles will be covered, such as: marketing, strategic management, communication, sales and revenue generation, facility management and finance.

SMT 110 ESPORT IN SOCIETY (3 CR)

This course is designed to explore the sociological factors that influence esports in our society. The purpose of the course is to provide the student with the basis and ability to examine sociological issues found within esports. Key areas that will be examined in this course are health and wellness, global issues, youth and teen experiences, and race, religion and gender equity in esports.

SMT 111 HISTORICAL AND SOCIOLOGICAL ISSUES IN SPORT (3 CR)

This course is designed for students to examine and understand the ways in which sport and physical activity are affected by historical and social forces, and in turn, how sport and physical activity influence society. This course also examines the sociological factors that influence sport in our society. The purpose of the course is to provide students with a sound theoretical basis and the ability to critically examine the sociological issues found within sport.

SMT 210 INTRODUCTION TO ESPORT MANAGEMENT (3 CR)

This course is designed to explore the various areas of the esports business industry. The course will examine the following areas in esports: business competencies, event management, league operations, fan engagement, coaching, team management, content creation and video production, sponsorship, and broadcasting and streaming. Other areas that will be examined in this course are health promotion and preventative care for esports gamers, influence of media on esports, and the history of esports. This course

will introduce students to career opportunities and business concepts required to manage sport organizations and operations. The industry structure and challenges will also be discussed.

SMT 230 PRINCIPLES OF SPORT MARKETING (3 CR)

Students analyze the sport marketplace and consumption trends to identify customer wants and needs and develop effective marketing strategies to satisfy them. Emphasis is placed on evaluating sport/entertainment environments, identifying target markets, building brands, and the marketing functions of product or service planning, pricing, promotion and placement (distribution).

SMT 240 SPORT FACILITY AND EVENT MANAGEMENT (3 CR)

This course examines the principles of facility operations and event management in the industry of sport management. This course provides students with an in-depth investigation of the unique challenges and opportunities that are routinely faced by a business, facility or event manager in the context of events at sport and entertainment venues. This course offers an introduction to the planning, marketing, management, and evaluation of sporting and entertainment venues. This course offers an introduction to the planning, marketing, management, and evaluation of sporting and other entertainment venues. This course gives students an overview of the three major components of facility management: event management, risk management, and facility management.

SMT 245 INTERNSHIP (3 CR)

Students plan, organize, direct, and assess a public activity that integrates the learning objectives of the sports management degree. Students will have meaningful internship experience with an appropriate company. The company and job must be approved by the supervising faculty member.

Prerequisite: Instructor permission required.

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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 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.

SOC 122 SERVICE IN ACTION (2 CR)

Students will travel during 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.

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 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.

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.

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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.

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

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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.

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.

Prerequisites: STM 101, PHL 232 and MAT 131 or higher*

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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.

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.

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 college equipment. Students crew a production.

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 soundtracks 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

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UNMANNED AERIAL SYSTEMS (UAS)**UAS 101 Introduction to Unmanned Aerial Systems (4 CR)**

This course prepares students to operate in the Federal Aviation Administration controlled and uncontrolled airspace system. Various rules and regulations regarding aircraft and unmanned aerial systems (UAS) will be covered. Flying of UAS will be included.

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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: MAT 040 and WLD 100*

WLD 115 WELD III-WELDING ALUMINUM AND STAINLESS STEEL (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.

Prerequisite: WLD 115

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WORLD LANGUAGES (WRL)

WRL 102 PORTUGUESE CONVERSATION (2CR)

This course is designed for people who have little or no knowledge of Portuguese. The emphasis is on speaking and listening. The course introduces practical vocabulary, culture, pronunciation, and essential grammar with minimal reading and writing.

WRL 103 PORTUGUESE CONVERSATION II (2CR)

This course is designed for people who have little knowledge of Portuguese. The emphasis is on speaking and listening. The course presents additional practical vocabulary, culture, pronunciation, and essential grammar with minimal reading and writing.

Prerequisite: WRL 102

WRL 104 MANDARIN CONVERSATION I (2CR)

This course is designed for people who have little or no knowledge of Mandarin. The emphasis is on speaking and listening. The course introduces practical vocabulary, culture, pronunciation, and essential grammar with minimal reading and writing.

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NONCREDIT COURSES

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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SPECIAL OPTIONS

Each discipline offers the following options. Contact the specific faculty for more information.

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.