
*PROGRAMS
THAT LEAD TO A*

***BACHELOR'S
DEGREE***

ASSOCIATE IN SCIENCE
and
**ASSOCIATE IN
ENGINEERING SCIENCE**

Associate in Science

Program Code: 0002

Description:

These requirements are for students who are majoring in science or mathematics and who plan to transfer to a four-year institution to complete a baccalaureate degree. The curriculum guides that follow serve as a general guide to the selection of courses toward fulfilling degree requirements specific to your intended major at a four-year college or university. Since requirements vary at colleges and universities, it is important to select your courses with the assistance of an academic advisor.

Admission:

Students wishing to pursue this degree may do so prior to being formally admitted to the program. However, all students must fulfill the admissions requirements, noted under the *Admissions Information* section of the catalog, prior to graduation.

Terms:

Students have six years to complete the requirements for the program they have declared. If the requirements are not completed within six years, students will be required to meet degree requirements for the program in effect at that time. However, students not enrolled for three consecutive semesters (not including summer) must meet the curriculum requirements in effect at the time of re-enrollment. Students can always choose to complete the current curriculum degree requirements.

Total Hours:

A minimum of 64 semester credits is required for this degree.

Residency:

Fifteen of the last 24 credits or an accumulation of 36 credits must be completed at SWIC. Active duty U.S. armed forces and reserve service members are only required to earn 15 credits at SWIC.

GPA:

A minimum cumulative GPA of 2.00 is required for a degree.

English and Math Requirements for Degrees:

All students pursuing transfer degrees (AA, AS, AFA, AES) are encouraged to enroll in and complete their English 101 and Math requirement(s) (see checklist for options) within their first 24-30 semester credits of enrollment.

Transfer Resources:

Please view additional transfer resources at swic.edu/articulation.

SWIC Articulation Agreements:

SWIC has developed a number of Articulation Agreements with four-year universities to allow for seamless transfer into specific majors. These articulations list recommended coursework to prepare SWIC graduates for entry at the junior level. Please visit swic.edu/articulation to learn more about Articulation Agreements. Most colleges require a grade of “C” or better in a course for transferability of coursework.

Human Relations:

One of the following courses must be completed. The course that is selected may also be applied toward the Humanities or Social/Behavioral Science General Education requirement as applicable. For reference, these courses are listed in **white** print in the general education areas.

- Humanities & Fine Arts: ART 110 HIST 230, LIT 117, LIT 215, LIT 216
- Social Science & Behavioral Science: : SOC 220, SOC 230

Non-Western Culture:

One of the following courses must be completed. The course that is selected may also be applied toward the Humanities or Social/Behavioral Science General Education requirement as applicable. For reference, these courses are **highlighted** in the general education areas.

- Humanities & Fine Arts: ART 103, HIST 286, LIT 205, MUS 110, PHIL 155
- Social Science & Behavioral Science: ANTH 150, GEOG 202, HIST 101, HIST 102, HIST 114, HIST 115, HIST 117, HIST 118, POLS 241, SOC 220

College Orientation:

Beginning students are encouraged to enroll in ORIE 101 College Orientation Seminar or ORIE 110 College Success Strategies. For information regarding this course, see the *Course Description Guide* at the back of the catalog.

Apply for Graduation:

Students must submit an application to Enrollment Services. Applications can be submitted through eSTORM or through Enrollment Services. To be considered for a specific term, applications must be received by the following dates:

<u>Term</u>	<u>Application Date</u>
Fall/December	Oct. 15
Spring/May	Feb. 15
Summer/July	June 15

Associate in Science

Degree Requirements Checklist

Students **MUST** take one Human Relations Course **AND** one Non-Western Culture Course

Human Relations Course:
designed specifically to examine aspects of human diversity within the US

Non-Western Course:
designed specifically to examine aspects of human diversity from a non-Western perspective

*Included in IAI majors codes. Check:
<https://itransfer.org/courses/descriptors.php>

IAI General Education Core Curriculum (IAI GECC): Successful completion of the IAI GECC (12-13 courses / 37-41 credits) at SWIC will guarantee participating colleges and universities agree to accept the IAI GECC in lieu of their own comparable lower-division general education requirements.				
COMMUNICATIONS (total of 3 courses / 9 semester credits) – A minimum grade of “C” is required for ENG 101 & 102				
_____ ENG 101		_____ ENG 102		_____ COMM 151
HUMANITIES AND FINE ARTS (total of 2 courses / 6 semester credits: at least 1 course from humanities and at least 1 course from fine arts) Humanities (at least 1 course / 3 semester credits)				
_____ FREN 202	_____ LIT 117	_____ LIT 202	_____ LIT 251*	_____ PHIL 151
_____ FILM 225	_____ LIT 120	_____ LIT 205	_____ LIT 252*	_____ PHIL 152
_____ GERM 202	_____ LIT 125	_____ LIT 213*	_____ LIT 290	_____ PHIL 155
_____ HIST 230	_____ LIT 133	_____ LIT 214*	_____ LIT 291	_____ PHIL 160
_____ HIST 286	_____ LIT 134	_____ LIT 215	_____ LIT 293/ED 293	_____ SPAN 202
_____ LIT 113	_____ LIT 201	_____ LIT 216	_____ PHIL 150	
Fine Arts (at least 1 course / 3 semester credits)				
_____ ART 101	_____ ART 105	_____ FILM 115	_____ MUS 101	_____ THEA 120
_____ ART 103	_____ ART 106	_____ FILM 215	_____ MUS 102	
_____ ART 104	_____ ART 110	_____ FILM 225	_____ MUS 110	
SOCIAL SCIENCES AND BEHAVIORAL SCIENCES (total of 2 courses / 6 semester credits: 1 course each from at least 2 disciplines below) Social Sciences (at least 1 course / 3 semester credits)				
_____ ECON 115	_____ GEOG 202	_____ HIST 115	_____ HIST 181*	_____ POLS 262*
_____ ECON 201	_____ HIST 101*	_____ HIST 117	_____ POLS 150*	_____ POLS 270*
_____ ECON 202	_____ HIST 102*	_____ HIST 118	_____ POLS 240*	
_____ GEOG 152	_____ HIST 114	_____ HIST 180*	_____ POLS 241*	
Behavioral Sciences (at least 1 course / 3 semester credits)				
_____ ANTH 150	_____ PSYC 151*	_____ PSYC 251*	_____ SOC 153*	_____ SOC 230*
_____ ANTH 160	_____ PSYC 210*	_____ PSYC 253*	_____ SOC 203*	_____ SOC 255*
_____ ANTH 250	_____ PSYC 250*	_____ PSYC 295*	_____ SOC 220*	
MATHEMATICS (total of 2 courses / 6-8 semester credits)				
_____ MATH 191 or BUS 205*		_____ MATH 203*		_____ MATH 205*
_____ MATH 113		_____ MATH 204*		_____ MATH 213
PHYSICAL AND LIFE SCIENCES (total of 3 courses: 1 Life Science; 1 Physical Science; with at least 1 of those being a laboratory course 10-11 semester credits) Life Science (1 course / total of 3-4 semester credits) Physical Science (1 course / total of 3-4 semester credits)				
_____ BIOL 100		_____ ATY 101	_____ ES 102	_____ PHYS 151
_____ BIOL 101*		_____ CHEM 101	_____ ES 114	_____ PHYS 204*
_____ BIOL 106		_____ CHEM 105*	_____ ES 180	_____ SCIE 101
		_____ ES 101	_____ ES 250	_____ SCIE 110
Additional Physical and Life Sciences (total 3-4 semester credits)				
_____ Additional course from either Physical or Life Sciences				
_____ BIOL 102	_____ BIOL 151	_____ CHEM 201	_____ PHYS 152	_____ PHYS 206
_____ BIOL 106	_____ CHEM 106	_____ CHEM 202	_____ PHYS 205	
HUMAN WELL-BEING (total of 2 semester credits) The courses below are not included in the IAI General Education Core Curriculum.				
_____ HES 130	_____ HES 152	_____ HES 156	_____ HES 172	_____ HRO 101
_____ HES 131	_____ HES 154	_____ HES 158	_____ HES 180	_____ HRO 150
_____ HES 151	_____ HES 155	_____ HES 160		
Additional Transfer Major/Minor Courses and Electives (total of 20-27 semester credits) Applicable major/minor/elective courses are identified in the Course Description Guide as “T” type classes. “C” type courses included in 2+2 Articulation Agreements of the A.A.S. Programs can be included as electives for the A.S. Since requirements vary from one institution to another, all new degree seeking students must meet regularly with an academic advisor as well as verify information with the transfer institution. Electives should be selected from the following disciplines:				
AGRI	CHEM	ES	MATH	PHYS
ATY	ENGR	GEOG	MSC	
BIOL	ED	HES	ORIE	
Other (as identified in 2+2 agreements)				
GECC: Students seeking to complete the GECC should take one additional Humanities and Fine Arts and one additional Social and Behavioral Science course (6 total credit hours). These credits can be applied to the 26-27 credits of additional transfer major/minor and electives.				

Biology Pre-Major

Associate in Science Degree

swic.edu/biology

Department Chair/Faculty: Jessica Baack, ext. 5605
Email: Jessica.Baack@swic.edu
Dean: Dr. Kimberly Cherry-Vogt, ext. 5050
Email: Kimberly.Cherryvogt@swic.edu

Biology pre-majors may work toward degrees in organismal biology such as botany, microbiology or zoology; environmental degrees such as ecology, forestry or wildlife biology; professional areas such as pre-dentistry, pre-pharmacy, pre-medicine or pre-veterinary; or education degrees such as elementary, secondary or college science teaching.

Articulation Agreements

- Eastern Illinois University - BS Biological Services
- SIU-Edwardsville – BS Biology-Ecology, Evolution & Environment
- SIU-Edwardsville – BS Biology-Genetics & Cellular
- SIU-Edwardsville – BS Biology-Integrative Studies
- SIU-Edwardsville – BS Biology-Medical Sciences

Important Transfer Information

Read the Course Description Guide (yellow section of the catalog) for more information on course content and requisites, which may be necessary for some courses.

If you KNOW where you are transferring:

- Transfer requirements vary by receiving institution.
- Plan your Associate in Science and transfer requirements with a SWIC academic advisor and use the transfer guide of the four-year institution you plan to attend.
- Refer to *Recommended Steps and Timeline to Transfer to Four-Year Institutions* in the front of this catalog.

If you DON'T KNOW where you are transferring:

- Plan your Associate in Science with a SWIC academic advisor.
- The **Associate in Science Degree Requirement Checklist** in the front of this section may be used as a GENERAL GUIDE; transfer requirements vary by receiving institution.
- Refer to *Recommended Steps and Timeline to Transfer to Four-Year Institutions* in the front of this catalog.
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Please view additional transfer resources at swic.edu/articulation.

Associate in Science Degree (0002) – Biology Pre-Major

Students who plan to earn an Associate in Science degree and then transfer to a four-year college or university to major in Biology should follow the steps listed below. **It is strongly recommended that you confer with a SWIC academic advisor prior to enrolling each semester and familiarize yourself with the specific requirements of the four-year institution where you plan to transfer.**

1. Fulfill the General Education and other institutional requirements for the Associate in Science degree listed in the front of this section. General Education course **preferences** may vary by transfer institution. For students who do not know where they plan to transfer, the Illinois Articulation Initiative (IAI) Biological Sciences Major Panel recommends the following general education courses for this major:
 - MATH 203 Analytic Geometry & Calculus I
 - BIOL 101 Principles of Biology I
 - CHEM 105 General Chemistry I
2. As you fulfill your degree requirements, it is **strongly recommended** by the IAI Biological Sciences Major Panel that you take the following classes:
 - BIOL 102 Principles of Biology II
 - CHEM 106 General Chemistry II
 - CHEM 201 Organic Chemistry I
 - CHEM 202 Organic Chemistry II
3. The additional courses recommended below may be applicable toward a baccalaureate Biology major. **Please keep in mind that most transfer institutions limit the number of semester credits taken within a student's major field of study at the community college level.** To ensure the acceptance of such courses toward your intended major, check with the four-year institution where you are transferring or a SWIC academic advisor regarding their applicability.
 - BIOL 108 General Ecology
 - BIOL 151 Fundamental Botany
 - BIOL 270 Genetics
 - PHYS 151 College Physics I
 - OR PHYS 204 Physics-Mechanics
 - PHYS 152 College Physics II
 - OR PHYS 205 Physics-Heat, Electricity & Magnetism
 - MATH 191 Introduction to Statistics
4. Fulfill all other Associate in Science degree requirements listed in the front of this section.
5. Apply for graduation by the date published in the college calendar.
6. Earn at least 64 **transferable** credits with a minimum cumulative grade point average of 2.00 to graduate from SWIC. **Many** transfer institutions require a higher GPA for admission to the institution and/or specific majors.

Note: Enrollment in many transfer classes is based on your fulfillment of course requisites and/or your placement in Math and English classes.

Career Opportunities

A variety of careers are open to students who graduate with a bachelor's degree in biology including:

- Aquatic biologist
- Biomedical scientist
- Ecologist
- Fisheries biologist
- Forensic scientist
- Geneticist
- Infection control specialist
- Laboratory technician
- Marine biologist
- Microbiologist
- Mortician
- Physiologist
- Public health specialist
- Teacher
- Veterinarian
- Wildlife biologist

Chemistry Pre-Major

Associate in Science Degree

swic.edu/chemistry

Department Chair: Mitch Robertson, ext. 5610
Email: Mitchell.Robertson@swic.edu
Dean: Dr. Kimberly Cherry-Vogt, ext. 5050
Email: Kimberly.Cherryvogt@swic.edu

Chemistry provides the basis for medicine, biomedical technology, ceramics, polymers, metallurgy, environmental and ecological sciences and many other fields. Students may pursue one of these fields or may choose a special interest in a specific area of chemistry such as analytical chemistry, biochemistry, organic chemistry, physical chemistry, colloid and surface chemistry, polymer chemistry or biology.

Articulation Agreements

- SIU-Edwardsville – BS Biochemistry
- SIU-Edwardsville – BS Biochemistry ACS Certified
- SIU-Edwardsville – BS Chemistry
- SIU-Edwardsville – BS Chemistry ACS Certified
- SIU-Edwardsville – BS Chemistry: Medical Science

Important Transfer Information

Read the Course Description Guide (yellow section of the catalog) for more information on course content and requisites, which may be necessary for some courses.

If you KNOW where you are transferring:

- Transfer requirements vary by receiving institution.
- Plan your Associate in Science and transfer requirements with a SWIC academic advisor and use the transfer guide of the four-year institution you plan to attend.
- Refer to *Recommended Steps and Timeline to Transfer to Four-Year Institutions* in the front of this catalog.

If you DON'T KNOW where you are transferring:

- Plan your Associate in Science with a SWIC academic advisor.
- The **Associate in Science Degree Requirement Checklist** in the front of this section may be used as a GENERAL GUIDE; transfer requirements vary by receiving institution.
- Refer to *Recommended Steps and Timeline to Transfer to Four-Year Institutions* in the front of this catalog.

Please view additional transfer resources at swic.edu/articulation.

Associate in Science Degree (0002) – Chemistry Pre-Major

Students who plan to earn an Associate in Science degree and then transfer to a four-year college or university to major in Chemistry should follow the steps listed below. **It is strongly recommended that you confer with a SWIC academic advisor prior to enrolling each semester and familiarize yourself with the specific requirements of the four-year institution where you plan to transfer.**

1. Fulfill the General Education and other institutional requirements for the Associate in Science degree listed in the front of this section. General Education course **preferences** may vary by transfer institution. For students who do not know where they plan to transfer, the Illinois Articulation Initiative (IAI) Chemistry Major Panel recommends the following general education courses for this major:
 - MATH 203 Analytic Geometry & Calculus I
 - MATH 204 Analytic Geometry & Calculus II
 - PHYS 204 Physics-Mechanics
 - PHYS 205 Physics-Heat, Electricity & Magnetism
 - BIOL 101 Principles of Biology I
2. As you fulfill your degree requirements, it is **strongly recommended** by the IAI Chemistry Major Panel that you take the following classes:
 - CHEM 105 General Chemistry I
 - CHEM 106 General Chemistry II
 - CHEM 201 Organic Chemistry I
 - CHEM 202 Organic Chemistry II
3. The additional courses recommended below may be applicable toward a baccalaureate Chemistry major. **Please keep in mind that most transfer institutions limit the number of semester credits taken within a student's major field of study at the community college level.** To ensure the acceptance of such courses toward your intended major, check with the four-year institution where you are transferring or a SWIC academic advisor regarding their applicability.
 - BIOL 102 Principles of Biology II
 - MATH 191 Introduction to Statistics
 - PHYS 206 Physics-Light & Modern Physics
 - MATH 205 Analytic Geometry & Calculus III
4. Fulfill all other Associate in Science degree requirements listed in the front of this section.
5. Apply for graduation by the date published in the college calendar.
6. Earn at least 64 **transferable** credits with a minimum cumulative grade point average of 2.00 to graduate from SWIC. **Many** transfer institutions require a higher GPA for admission to the institution and/or specific majors.

Note: Enrollment in many transfer classes is based on your fulfillment of course requisites and/or your placement in Math and English classes.

Career Opportunities

A variety of careers are open to students who graduate with a bachelor's degree in chemistry including:

- Pharmacologist
- Biochemist
- Pharmacist
- Teacher
- Chemical engineer
- Toxicologist
- Quality control specialist
- Chemical technician
- Crime lab analyst
- Product tester
- Forensic chemist
- Analytical chemist
- Water purification chemist
- Pharmaceutical sales person

Computer Science Pre-Major

Associate in Science Degree

swic.edu/computer-science

(August-May);
Department Chair: Keven Hansen, ext 5661
Assistant Chair: Jaime Manche, ext 5795

(June-July);
Department Chair: Jaime Manche, ext 5795
Assistant Chair: Keven Hansen, ext 5661

Dean: Dr. Kimberly Cherry-Vogt, ext. 5050
Email: Kimberly.Cherryvogt@swic.edu

This two-year program is designed for students who plan to transfer to a senior institution to complete a four-year degree program with a technical/mathematical emphasis. A four-year degree in computer science prepares students to work as scientific and business application programmers, computer systems analysts, operation research analysts and numerical analysts. Career opportunities are available in industry, business, government and education.

Important Transfer Information

Read the Course Description Guide (yellow section of the catalog) for more information on course content and requisites, which may be necessary for some courses.

If you KNOW where you are transferring:

- Transfer requirements vary by receiving institution.
- Plan your Associate in Science and transfer requirements with a SWIC academic advisor and use the transfer guide of the four-year institution you plan to attend.
- Refer to *Recommended Steps and Timeline to Transfer to Four-Year Institutions* in the front of this catalog.

If you DON'T KNOW where you are transferring:

- Plan your Associate in Science with a SWIC academic advisor.
- The **Associate in Science Degree Requirement Checklist** in the front of this section may be used as a GENERAL GUIDE; transfer requirements vary by receiving institution.
- Refer to *Recommended Steps and Timeline to Transfer to Four-Year Institutions* in the front of this catalog.

Please view additional transfer resources at swic.edu/articulation.

Articulation Agreements

- SIU-Carbondale – BS Information Technology

Associate in Science Degree (0002) – Computer Science Pre-Major
Students who plan to earn an Associate in Science degree and then transfer to a four-year college or university to major in Computer Science should follow the steps listed below. **It is strongly recommended that you confer with a SWIC academic advisor prior to enrolling each semester and familiarize yourself with**

the specific requirements of the four-year institution where you plan to transfer.

- Fulfill the General Education and other institutional requirements for the Associate in Science degree listed in the front of this section. General Education course **preferences** may vary by transfer institution. For students who do not know where they plan to transfer, the Illinois Articulation Initiative (IAI) Computer Science Major Panel recommends the following general education courses for this major:
 - MATH 203 Analytic Geometry & Calculus I
OR MATH 213 Calculus for Business & Social Sciences
OR MATH 113 Finite Math for Business & Social Sciences
 - PHYS 204 Physics-Mechanics
 - ECON 115 Introduction to Economics
OR ECON 201 Principles of Macroeconomics and
ECON 202 Principles of Microeconomics
- As you fulfill your degree requirements, it is **strongly recommended** by the IAI Computer Science Major Panel that you take the following classes:
 - MATH 171 Computer Science I – Java
 - MATH 271 Computer Science II – Java
- The additional courses recommended below may be applicable toward a baccalaureate Computer Science major. **Please keep in mind that most transfer institutions limit the number of semester credits taken within a student’s major field of study at the community college level.** To ensure the acceptance of such courses toward your intended major, check with the four-year institution where you are transferring or a SWIC academic advisor regarding their applicability.
 - MATH 292 Linear Algebra
 - MATH 191 Introduction to Statistics
- Fulfill all other Associate in Science degree requirements listed in the front of this section.
- Apply for graduation by the date published in the college calendar.
- Earn at least 64 **transferable** credits with a minimum cumulative grade point average of 2.00 to graduate from SWIC. **Many** transfer institutions require a higher GPA for admission to the institution and/or specific majors.

Note: Enrollment in many transfer classes is based on your fulfillment of course requisites and/or your placement in Math and English classes.

Career Opportunities

- A variety of careers are open to students who graduate with a bachelor’s degree in computer science including:
- Web master
 - Database administrator
 - Computer network specialist
 - Computer programmer
 - Computer software engineer
 - Computer systems analyst
 - Information systems manager
 - Teacher/professor
 - Internet/intranet programmer

Earth Science Pre-Major

Associate in Science Degree

swic.edu/earth-science

Department Chair: Mitch Robertson, ext. 5610
Email: Mitchell.Robertson@swic.edu
Dean: Dr. Kimberly Cherry-Vogt, ext. 5050
Email: Kimberly.Cherryvogt@swic.edu

Earth Science is the general name for all the sciences that seek to understand the Earth and its neighbors in space. Geology, which literally means the study of the Earth, examines the origin and development of the solid Earth, as well as the processes that operate beneath and upon its surface. Meteorology involves the study of our atmosphere, while oceanography deals with the dynamics of the oceans. The study of the Earth is not confined to investigating the interactions and interrelationships on our planet alone, but also attempts to relate the earth to the larger universe using the science of astronomy.

Articulation Agreements

- Eastern Illinois University:
- BS Geography: Environmental/Physical
 - BS Geography: Human Geography
 - BS Geology

Important Transfer Information

Read the Course Description Guide (yellow section of the catalog) for more information on course content and requisites, which may be necessary for some courses.

If you KNOW where you are transferring:

- Transfer requirements vary by receiving institution.
- Plan your Associate in Science and transfer requirements with a SWIC academic advisor and use the transfer guide of the four-year institution you plan to attend.
- Refer to *Recommended Steps and Timeline to Transfer to Four-Year Institutions* in the front of this catalog.

If you DON'T KNOW where you are transferring:

- Plan your Associate in Science with a SWIC academic advisor.
- The **Associate in Science Degree Requirement Checklist** in the front of this section may be used as a GENERAL GUIDE; transfer requirements vary by receiving institution.
- Refer to *Recommended Steps and Timeline to Transfer to Four-Year Institutions* in the front of this catalog.

Please view additional transfer resources at swic.edu/articulation.

Associate in Science Degree (0002) –

Earth Science Pre-Major

Students who plan to earn an Associate in Science degree and then transfer to a four-year college or university to major in Geology, Meteorology, Astronomy, or Oceanography should follow the steps listed below. **It is strongly recommended that you confer with a SWIC academic advisor prior to enrolling each semester and familiarize yourself with the specific requirements of the four-year institution where you plan to transfer.**

- Fulfill the General Education and other institutional requirements for the Associate in Science degree listed in the front of this section. General Education course preferences may vary by transfer institution. For students who do not know where they plan to transfer, the Physical Sciences department recommends the following general education courses for these majors:
 - MATH 203 Analytic Geometry & Calculus I
 - SOC 153 Introductory Sociology
 - GEOG 152 World Regional Geography
 - CHEM 105 General Chemistry I
- As you fulfill your degree requirements, it is strongly recommended by the Physical Sciences department that you take the following classes for the listed majors:

Geology Major

ES 102 Physical Geology
ES 180 Historical Geology
CHEM 106 General Chemistry II

Meteorology Major

ES 250 Introduction to Meteorology
CHEM 106 General Chemistry II

Astronomy Major

ATY 101 Astronomy
CHEM 106 General Chemistry II

Oceanography Major

ES 102 Physical Geology
CHEM 106 General Chemistry II

- The additional courses recommended on the next page may be applicable toward the indicated majors. Please keep in mind that most transfer institutions limit the number of semester credits taken within a student’s major field of study at the community college level. To ensure the acceptance of such courses toward your intended major, check with the four-year institution where you are transferring or a SWIC academic advisor regarding their applicability.

- Geology or Oceanography Major**
PHYS 151 College Physics I **OR** PHYS 204 Physics-Mechanics
PHYS 152 College Physics II **OR** PHYS 205 Physics-Heat, Electricity & Magnetism

Astronomy or Meteorology Major
MATH 204 Analytic Geometry & Calculus II
PHYS 204 Physics-Mechanics
PHYS 205 Physics-Heat, Electricity & Magnetism

4. Fulfill all other Associate in Science degree requirements listed in the front of this section.

5. Apply for graduation by the date published in the college calendar.

6. Earn at least 64 transferable credits with a minimum cumulative grade point average of 2.00 to graduate from SWIC. Many transfer institutions require a higher GPA for admission to the institution and/or specific majors.

Note: Enrollment in many transfer classes is based on your fulfillment of course requisites and/or your placement in Math and English classes.

Career Opportunities

A variety of careers are open to students who graduate with a bachelor’s degree in geology, astronomy, meteorology or oceanography including:

- Geologist
 - Oceanographer
 - Mining engineer
 - Meteorologist
 - Teacher
 - Astronomer
 - Economic geologist
 - Paleontologist
 - Park naturalist

- Hydrologist
 - Solar energy engineer
 - Seismologist
 - Agricultural scientist
 - Environmental engineer
 - Soil scientist
 - Forest ranger
 - Volcanologist

Mathematics Pre-Major

Associate in Science Degree

swic.edu/math

- (August-May);
Department Chair: Keven Hansen, ext 5661
Assistant Chair: Jaime Manche, ext 5795

(June-July);
Department Chair: Jaime Manche, ext 5795
Assistant Chair: Keven Hansen, ext 5661

Dean: Dr. Kimberly Cherry-Vogt, ext. 5050
Email: Kimberly.Cherryvogt@swic.edu

As society has become more technical, many professions are requiring additional mathematical skills. Some of the fastest growing and highest paying fields require individuals with sophisticated mathematical competence, as well as other communication skills. A bachelor’s degree in mathematics is a highly marketable degree in a wide variety of professions.

Articulation Agreements

- EIU – BA Mathematics

Important Transfer Information

Read the Course Description Guide (yellow section of the catalog) for more information on course content and requisites, which may be necessary for some courses.

If you KNOW where you are transferring:

- Transfer requirements vary by receiving institution.
- Plan your Associate in Science and transfer requirements with a SWIC academic advisor and use the transfer guide of the four-year institution you plan to attend.
- Refer to *Recommended Steps and Timeline to Transfer to Four-Year Institutions* in the front of this catalog.

If you DON’T KNOW where you are transferring:

- Plan your Associate in Science with a SWIC academic advisor.
- The **Associate in Science Degree Requirement Checklist** in the front of this section may be used as a GENERAL GUIDE; transfer requirements vary by receiving institution.
- Refer to *Recommended Steps and Timeline to Transfer to Four-Year Institutions* in the front of this catalog.

Please view additional transfer resources at swic.edu/articulation.

Associate in Science Degree (0002) – Mathematics Pre-Major
Students who plan to earn an Associate in Science degree and then transfer to a four-year college or university to major in Mathematics should follow the steps listed below. **It is strongly recommended that you confer with a SWIC academic advisor**

prior to enrolling each semester and familiarize yourself with the specific requirements of the four-year institution where you plan to transfer.

1. Fulfill the General Education and other institutional requirements for the Associate in Science degree listed in the front of this section. General Education course **preferences** may vary by transfer institution. For students who do not know where they plan to transfer, the Illinois Articulation Initiative (IAI) Mathematics Major Panel recommends the following general education courses for this major:
 - MATH 203 Analytic Geometry & Calculus I
 - PHYS 204 Physics-Mechanics

2. As you fulfill your degree requirements, it is **strongly recommended** by the IAI Mathematics Major Panel that you take the following classes:
 - MATH 204 Analytic Geometry & Calculus II
 - MATH 205 Analytic Geometry & Calculus III
 - MATH 292 Linear Algebra
 - MATH 290 Differential Equations

3. The additional courses recommended below may be applicable toward a baccalaureate Mathematics major. **Please keep in mind that most transfer institutions limit the number of semester credits taken within a student’s major field of study at the community college level.** To ensure the acceptance of such courses toward your intended major, check with the four-year institution where you are transferring or a SWIC academic advisor regarding their applicability.
 - MATH 191 Introduction to Statistics **OR** MATH 171 Computer Science I – JAVA **OR** MATH 210 Computer Programming for Engineers
 - PHYS 205 Physics-Heat, Electricity & Magnetism

4. Fulfill all other Associate in Science degree requirements listed in the front of this section.

5. Apply for graduation by the date published in the college calendar.

6. Earn at least 64 **transferable** credits with a minimum cumulative grade point average of 2.00 to graduate from SWIC. **Many** transfer institutions require a higher GPA for admission to the institution and/or specific majors.

Note: Enrollment in many transfer classes is based on your fulfillment of course requisites and/or your placement in Math and English classes.

Career Opportunities

A variety of careers are open to students who graduate with a bachelor’s degree in math including:

- Statistician
 - Actuary
 - Operations research analyst
 - Engineer (civil, electrical, mechanical, etc.)
 - Teacher
 - Financial analyst
 - Systems consultant
 - Research data analyst

Physics Pre-Major

Associate in Science Degree

swic.edu/physics

Department Chair: Mitch Robertson, ext. 5610
Email: Mitchell.Robertson@swic.edu
Dean: Dr. Kimberly Cherry-Vogt, ext. 5050
Email: Kimberly.Cherryvogt@swic.edu

Physics seeks to understand the very basic concepts of force, energy, mass and charge. It is a broad and deep subject split into theoretical and experimental branches. Theoretical physics deals with the inquiry and formulation of new theories while experimental physics tests and analyzes these or previously existing theories. Physics relies extensively on sophisticated mathematics to provide its framework of study. A degree in physics can lead to careers from engineering to space research. Nuclear power, lasers and solid-state electronics are examples of technological advances that have come about through the study of physics.

Articulation Agreements

- SIUE – BS Physics-Astronomy
- SIUE – BS Physics-Biomedical Physics
- SIUE – BS Physics-Photonics
- SIUE – BS Physics-Laser Physics

Important Transfer Information

Read the Course Description Guide (yellow section of the catalog) for more information on course content and requisites, which may be necessary for some courses.

If you KNOW where you are transferring:

- Transfer requirements vary by receiving institution.
- Plan your Associate in Science and transfer requirements with a SWIC academic advisor and use the transfer guide of the four-year institution you plan to attend.
- Refer to *Recommended Steps and Timeline to Transfer to Four-Year Institutions* in the front of this catalog.

If you DON'T KNOW where you are transferring:

- Plan your Associate in Science with a SWIC academic advisor.
- The **Associate in Science Degree Requirement Checklist** in the front of this section may be used as a GENERAL GUIDE; transfer requirements vary by receiving institution.
- Refer to *Recommended Steps and Timeline to Transfer to Four-Year Institutions* in the front of this catalog.

Please view additional transfer resources at swic.edu/articulation.

Associate in Science Degree (0002) – Physics Pre-Major
Students who plan to earn an Associate in Science degree and then transfer to a four-year college or university to major in Physics should follow the steps listed below. **It is strongly recommended that you confer with a SWIC academic advisor prior to enrolling each semester and familiarize yourself with the specific requirements of the four-year institution where you plan to transfer.**

1. Fulfill the General Education and other institutional requirements for the Associate in Science degree listed in the front of this section. General Education course **preferences** may vary by transfer institution. For students who do not know where they plan to transfer, the Illinois Articulation Initiative (IAI) Physics Major Panel recommends the following general education courses for this major:
 - MATH 203 Analytic Geometry & Calculus I
 - MATH 204 Analytic Geometry & Calculus II
 - CHEM 105 General Chemistry I
2. As you fulfill your degree requirements, it is **strongly recommended** by the IAI Physics Major Panel that you take the following classes:
 - PHYS 204 Physics-Mechanics
 - PHYS 205 Physics-Heat, Electricity & Magnetism
 - PHYS 206 Physics-Light & Modern Physics
3. The additional courses recommended below may be applicable toward a baccalaureate Physics major. **Please keep in mind that most transfer institutions limit the number of semester credits taken within a student's major field of study at the community college level.** To ensure the acceptance of such courses toward your intended major, check with the four-year institution where you are transferring or a SWIC academic advisor regarding their applicability.
 - MATH 205 Analytic Geometry & Calculus III
 - MATH 290 Differential Equations
 - MATH 292 Linear Algebra
 - CHEM 106 General Chemistry II
4. Fulfill all other Associate in Science degree requirements listed in the front of this section.
5. Apply for graduation by the date published in the college calendar.
6. Earn at least 64 **transferable** credits with a minimum cumulative grade point average of 2.00 to graduate from SWIC. **Many** transfer institutions require a higher GPA for admission to the institution and/or specific majors.

Note: Enrollment in many transfer classes is based on your fulfillment of course requisites and/or your placement in Math and English classes.

Career Opportunities

A variety of careers are open to students who graduate with a bachelor's degree in physics including:

- Nuclear engineer
- Atomic physicist
- Medical physicist
- Aerospace engineer
- Civil engineer
- Geologist
- Architect
- Audio engineer
- Electrical engineer
- Teacher

Pre-Dentistry Pre-Major

Associate in Science Degree

swic.edu/pre-dentistry

Dean: Dr. Kimberly Cherry-Vogt, ext. 5050
Email: Kimberly.Cherryvogt@swic.edu

Dentists focus on maintaining oral health through such preventive and repair practices as extracting, filling, cleaning or replacing teeth; performing corrective work, such as straightening teeth; treating diseased tissue of the gums; performing surgical operations on the jaw or mouth; and making and fitting false teeth. To be a dentist, one must attend dental school after graduating from college. Most dental schools require applicants to pass the DAT, or Dental Admissions Test, which tests a student's ability to succeeded in dental school.

Individuals interested in pursuing dentistry as a career should also note the importance of manual dexterity and scientific ability. Skilled, steady hands are necessary, as well as good space and shape judgment and artistic and creative ability. Good vision is required because of the detailed work. Individuals should also possess a love of learning since advances in dental research require dentists to continue their education throughout their careers.

Important Transfer Information

Read the Course Description Guide (yellow section of the catalog) for more information on course content and requisites, which may be necessary for some courses.

If you KNOW where you are transferring:

- Transfer requirements vary by receiving institution.
- Plan your Associate in Science and transfer requirements with a SWIC academic advisor and use the transfer guide of the four-year institution you plan to attend.
- Refer to *Recommended Steps and Timeline to Transfer to Four-Year Institutions* in the front of this catalog.

If you DON'T KNOW where you are transferring:

- Plan your Associate in Science with a SWIC academic advisor.
- The **Associate in Science Degree Requirement Checklist** in the front of this section may be used as a GENERAL GUIDE; transfer requirements vary by receiving institution.
- Refer to *Recommended Steps and Timeline to Transfer to Four-Year Institutions* in the front of this catalog.

Please view additional transfer resources at swic.edu/articulation.

Associate in Science Degree (0002) – Pre-Dentistry Pre-Major
Students who plan to earn an Associate in Science degree, transfer to a four-year college or university, and then continue on to a school of dentistry should follow the steps listed below. **It is strongly recommended that you confer with a SWIC academic advisor prior to enrolling each semester and familiarize yourself with the specific requirements of the four-year institution where you plan to transfer.**

1. Fulfill the General Education and other institutional requirements for the Associate in Science degree listed in the front of this section. General Education course **preferences** may vary by transfer institution.
2. As you fulfill your degree requirements, it is **strongly recommended** that you take the following classes:
 - BIOL 101 Principles of Biology I
 - BIOL 102 Principles of Biology II
 - CHEM 105 General Chemistry I
 - CHEM 106 General Chemistry II
 - CHEM 201 Organic Chemistry I
 - CHEM 202 Organic Chemistry II
3. **Most** dental schools will accept the following courses for credit towards meeting admission requirements:
 - MATH 191 Introduction to Statistics
 - PHYS 151 College Physics I
 - **OR** PHYS 204 Physics-Mechanics
 - PHYS 152 College Physics II
 - **OR** PHYS 205 Physics-Heat, Elec, & Magnetism
4. The **optional** courses listed below may be applicable toward admission to dental school. **Please keep in mind that most transfer institutions limit the number of semester credits taken within a student's major field of study at the community college level.** To ensure the acceptance of such courses toward your intended major, check with the four-year institution where you are transferring or a SWIC academic advisor regarding their applicability.
 - PSYC 151 General Psychology
 - BIOL 157 Human Anatomy & Physiology I
 - BIOL 158 Human Anatomy & Physiology II
 - BIOL 270 Genetics
 - MATH 203 Analytic Geometry & Calculus I
5. Fulfill all other Associate in Science degree requirements listed in the front of this section.
6. Apply for graduation by the date published in the college calendar.
7. Earn at least 64 **transferable** credits with a minimum cumulative grade point average of 2.00 to graduate from SWIC. **Many** transfer institutions require a higher GPA for admission to the institution and/or specific majors.

Note: Enrollment in many transfer classes is based on your fulfillment of course requisites and/or your placement in Math and English classes.

Pre-Medicine Pre-Major
Associate in Science Degree

swic.edu/pre-med

Dean: Dr. Kimberly Cherry-Vogt, ext. 5050
Email: Kimberly.Cherryvogt@swic.edu

A physician’s responsibilities cover a wide range of functions in health maintenance, including both acute care and preventive care approaches involving substantial patient education. These responsibilities include diagnosing disease, supervising the care of patients, and prescribing and implementing treatment.

Important Transfer Information
Read the Course Description Guide (yellow section of the catalog) for more information on course content and requisites, which may be necessary for some courses.
If you KNOW where you are transferring:
• Transfer requirements vary by receiving institution.
• Plan your Associate in Science and transfer requirements with a SWIC academic advisor and use the transfer guide of the four-year institution you plan to attend.
• Refer to Recommended Steps and Timeline to Transfer to Four-Year Institutions in the front of this catalog.
If you DON’T KNOW where you are transferring:
• Plan your Associate in Science with a SWIC academic advisor.
• The Associate in Science Degree Requirement Checklist in the front of this section may be used as a GENERAL GUIDE; transfer requirements vary by receiving institution.
• Refer to Recommended Steps and Timeline to Transfer to Four-Year Institutions in the front of this catalog.
Please view additional transfer resources at swic.edu/articulation.

Associate in Science Degree (0002) – Pre-Medicine Pre-Major

Students who plan to earn an Associate in Science degree, transfer to a four-year college or university, and then continue on to a school of medicine should follow the steps listed below. It is strongly recommended that you confer with a SWIC academic advisor prior to enrolling each semester and familiarize yourself with the specific requirements of the four-year institution where you plan to transfer.

- 1. Fulfill the General Education and other institutional requirements for the Associate in Science degree listed in the front of this section. General Education course preferences may vary by transfer institution.
- 2. As you fulfill your degree requirements, it is strongly recommended that you take the following classes:
• BIOL 101 Principles of Biology I
• BIOL 102 Principles of Biology II
• CHEM 105 General Chemistry I
• CHEM 106 General Chemistry II
• CHEM 201 Organic Chemistry I
• CHEM 202 Organic Chemistry II
- 3. Most medical schools will accept the following courses for credit towards meeting admission requirements:
• MATH 191 Introduction to Statistics
• PHYS 151 College Physics I
• OR PHYS 204 Physics-Mechanics
• PHYS 152 College Physics II
• OR PHYS 205 Physics-Heat, Electricity & Magnetism
- 4. The optional courses listed below may be applicable toward admission to medical schools. Please keep in mind that most transfer institutions limit the number of semester credits taken within a student’s major field of study at the community college level. To ensure the acceptance of such courses toward your intended major, check with the four-year institution where you are transferring or a SWIC academic advisor regarding their applicability.
• PSYC 151 General Psychology
• BIOL 157 Human Anatomy & Physiology I
• BIOL 158 Human Anatomy & Physiology II
• BIOL 270 Genetics
• MATH 203 Analytic Geometry & Calculus I
- 5. Fulfill all other Associate in Science degree requirements listed in the front of this section.
- 6. Apply for graduation by the date published in the college calendar.
- 7. Earn at least 64 transferable credits with a minimum cumulative grade point average of 2.00 to graduate from SWIC. Many transfer institutions require a higher GPA for admission to the institution and/or specific majors.

Note: Enrollment in many transfer classes is based on your fulfillment of course requisites and/or your placement in Math and English classes.

Pre-Pharmacy Pre-Major
Associate in Science Degree

swic.edu/pre-pharmacy

Dean: Dr. Kimberly Cherry-Vogt, ext. 5050
Email: Kimberly.Cherryvogt@swic.edu

Pharmacists distribute prescription drugs to individuals and advise patients and physicians on the selection, dosages, interactions and side effects of medications. Pharmacists monitor the health of patients to ensure the safe and effective use of medication. They also advise patients about general health topics such as diet, exercise and stress management. They could be involved in research for pharmaceutical manufacturers, developing new drugs and testing their side effects, or they could work in marketing, sales, or carrying out cost-benefit analysis on certain drugs. Other pharmacists work for the government or public health care services.

Important Transfer Information
Read the Course Description Guide (yellow section of the catalog) for more information on course content and requisites, which may be necessary for some courses.
If you KNOW where you are transferring:
• Transfer requirements vary by receiving institution.
• Plan your Associate in Science and transfer requirements with a SWIC academic advisor and use the transfer guide of the four-year institution you plan to attend.
• Refer to Recommended Steps and Timeline to Transfer to Four-Year Institutions in the front of this catalog.
If you DON’T KNOW where you are transferring:
• Plan your Associate in Science with a SWIC academic advisor.
• The Associate in Science Degree Requirement Checklist in the front of this section may be used as a GENERAL GUIDE; transfer requirements vary by receiving institution.
• Refer to Recommended Steps and Timeline to Transfer to Four-Year Institutions in the front of this catalog.
Please view additional transfer resources at swic.edu/articulation.

Associate in Science Degree (0002) – Pre-Pharmacy Pre-Major

Students who plan to earn an Associate in Science degree, transfer to a four-year college or university, and then continue on to a school of pharmacy should follow the steps listed below. It is strongly recommended that you confer with a SWIC academic advisor prior to enrolling each semester and familiarize yourself with the specific requirements of the four-year institution and professional school where you plan to transfer.

- 1. Fulfill the General Education and other institutional requirements for the Associate in Science degree listed in the front of this section. General Education course preferences may vary by transfer institution.
- 2. As you fulfill your degree requirements, it is strongly recommended that you take the following classes:
• BIOL 101 Principles of Biology I
• BIOL 102 Principles of Biology II
• CHEM 105 General Chemistry I
• CHEM 106 General Chemistry II
• CHEM 201 Organic Chemistry I
• CHEM 202 Organic Chemistry II
- 3. Most pharmacy schools will accept the following courses for credit towards meeting admission requirements:
• PHYS 151 College Physics I
• OR PHYS 204 Physics-Mechanics
• PHYS 152 College Physics II
• OR PHYS 205 Physics-Heat, Electricity & Magnetism
• BIOL 157 Human Anatomy & Physiology I
• BIOL 158 Human Anatomy & Physiology II
• MATH 191 Introduction to Statistics
• MATH 203 Analytic Geometry & Calculus I
- 4. The optional courses listed below may be applicable toward admission to pharmacy schools. Please keep in mind that most transfer institutions limit the number of semester credits taken within a student’s major field of study at the community college level. To ensure the acceptance of such courses toward your intended major, check with the four-year institution where you are transferring or a SWIC academic advisor regarding their applicability.
• ECON 201 Principles of Macroeconomics OR other ECON class
• BIOL 151 Fundamental Botany
- 5. Fulfill all other Associate in Science degree requirements listed in the front of this section.
- 6. Apply for graduation by the date published in the college calendar.
- 7. Earn at least 64 transferable credits with a minimum cumulative grade point average of 2.00 to graduate from SWIC. Many transfer institutions require a higher GPA for admission to the institution and/or specific majors.

Note: Enrollment in many transfer classes is based on your fulfillment of course requisites and/or your placement in Math and English classes.

Pre-Veterinary Medicine Pre-Major

Associate in Science Degree

swic.edu/pre-vet

Dean: Dr. Kimberly Cherry-Vogt, ext. 5050
Email: Kimberly.Cherryvogt@swic.edu

A veterinarian’s responsibilities cover a wide range of functions in animal health maintenance, including both acute care and preventive care approaches. These responsibilities include diagnosing disease, supervising the care of animals, and prescribing and implementing treatment.

Important Transfer Information

Read the Course Description Guide (yellow section of the catalog) for more information on course content and requisites, which may be necessary for some courses.

If you KNOW where you are transferring:

- Transfer requirements vary by receiving institution.
- Plan your Associate in Science and transfer requirements with a SWIC academic advisor and use the transfer guide of the four-year institution you plan to attend.
- Refer to *Recommended Steps and Timeline to Transfer to Four-Year Institutions* in the front of this catalog.

If you DON’T KNOW where you are transferring:

- Plan your Associate in Science with a SWIC academic advisor.
- The **Associate in Science Degree Requirement Checklist** in the front of this section may be used as a GENERAL GUIDE; transfer requirements vary by receiving institution.
- Refer to *Recommended Steps and Timeline to Transfer to Four-Year Institutions* in the front of this catalog.

Please view additional transfer resources at swic.edu/articulation.

Associate in Science Degree (0002) – Pre-Veterinary Medicine Pre-Major

Students who plan to earn an Associate in Science degree, transfer to a four-year college or university, and then continue on to a school of veterinary medicine should follow the steps listed below. **It is strongly recommended that you confer with a SWIC academic advisor prior to enrolling each semester and familiarize yourself with the specific requirements of the four-year institution where you plan to transfer.**

- Fulfill the General Education and other institutional requirements for the Associate in Science degree listed in the front of this section. General Education course **preferences** may vary by transfer institution.
- As you fulfill your degree requirements, it is **strongly recommended** that you take the following classes:
 - AGRI 111 Animal Science
 - BIOL 101 Principles of Biology I
 - BIOL 102 Principles of Biology II
 - CHEM 105 General Chemistry I
 - CHEM 106 General Chemistry II
 - CHEM 201 Organic Chemistry I
 - CHEM 202 Organic Chemistry II
- Most** veterinary schools will accept the following classes for credit towards meeting admission requirements
 - MATH 191 Introduction to Statistics
 - PHYS 151 College Physics I
 - OR** PHYS 204 Physics-Mechanics
 - PHYS 152 College Physics II
 - OR** PHYS 205 Introduction to Statistics
- The **optional** courses listed below may be applicable toward admission to veterinary schools. **Please keep in mind that most transfer institutions limit the number of semester credits taken within a student’s major field of study at the community college level.** To ensure the acceptance of such courses toward your intended major, check with the four-year institution where you are transferring or a SWIC academic advisor regarding their applicability.
 - BIOL 157 Human Anatomy & Physiology I
 - BIOL 158 Human Anatomy & Physiology II
 - BIOL 270 Genetics
 - MATH 203 Analytic Geometry & Calculus I
- Fulfill all other Associate in Science degree requirements listed in the front of this section.
- Apply for graduation by the date published in the college calendar.
- Earn at least 64 **transferable** credits with a minimum cumulative grade point average of 2.00 to graduate from SWIC. **Many** transfer institutions require a higher GPA for admission to the institution and/or specific majors.

Note: Enrollment in many transfer classes is based on your fulfillment of course requisites and/or your placement in Math and English classes.

Associate in Engineering Science

Program Code: AES1

Description:

An Associate in Engineering Science (AES) degree is an award for the satisfactory completion of a prescribed curriculum intended to transfer to baccalaureate degree programs in the area of engineering. The engineering subplans that follow serve as a general guide to the selection of courses toward fulfilling degree requirements specific to your intended engineering major at a four-year college or university. Because requirements vary at colleges and universities, it is important to select your courses with the assistance of the program coordinator and an academic advisor.

IMPORTANT NOTE TO STUDENTS: The Illinois Articulation Initiative (IAI) Engineering Major Panel recommends students planning to pursue an engineering major upon transfer should complete the Associate in Engineering Science degree *instead* of the Associate in Arts or Associate in Science degree. The AES degree requires less general education coursework and is the best option for students seeking a bachelor’s degree in Engineering upon transfer.

Program Outcomes:

- Upon completion of the AES degree, students will be able to:
- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
 - Apply visual and spatial reasoning to identify, formulate, and solve engineering problems.
 - Utilize the engineering design process to identify, formulate, and solve engineering problems.
 - Effectively participate and collaborate on an engineering team to determine goals, plan tasks, and meet project objectives.
 - Acquire and apply new knowledge as needed, using appropriate learning strategies.

Admission:

Admission into the Associate in Engineering Science requires math placement into or above MATH 203: Analytic Geometry & Calculus I. Students wishing to pursue requirements of this degree may do so prior to being formally admitted to the program as long as they meet the pre-requisites of the course. However, all students must fulfill the admissions requirements, noted under the *Admissions Information* section of the catalog, prior to graduation. High school seniors are encouraged to have their math and English placement assessed in the fall of their senior year.

Terms:

Students have six years to complete the requirements for the program they have declared. If the requirements are not completed within six years, students will be required to meet degree requirements for the program in effect at that time. However, students not enrolled for three consecutive semesters (not including summer) must meet the curriculum requirements in effect at the time of re-enrollment. Students can always choose to complete the current curriculum degree requirements.

Total Hours:

A minimum of 60 semester credits is required for this degree.

GPA:

A minimum cumulative GPA of 2.00 is required for a degree.

Residency:

Fifteen of the last 24 credits or an accumulation of 36 credits must be completed at SWIC. Active duty U.S. armed forces and reserve service members are only required to earn 15 credits at SWIC.

Human Relations:

One of the following courses must be completed. The course that is selected may also be applied toward the Humanities or Social/Behavioral Science General Education requirement as applicable. For reference, these courses are listed in **white** print in the general education areas.

- Humanities & Fine Arts: ART 110 HIST 230, LIT 117, LIT 215, LIT 216
- Social Science & Behavioral Science: SOC 220, SOC 230

Non-Western Culture:

One of the following courses must be completed. The course that is selected may also be applied toward the Humanities or Social/Behavioral Science General Education requirement as applicable. For reference, these courses are **highlighted** in the general education areas.

- Humanities & Fine Arts: ART 103, HIST 286, LIT 205, MUS 110, PHIL 155
- Social Science & Behavioral Science: ANTH 150, GEOG 202, HIST 101, HIST 102, HIST 114, HIST 115, HIST 117, HIST 118, POLS 241

Apply for Graduation:

Students must submit an application to Enrollment Services. Applications can be submitted through eSTORM or through Enrollment Services. To be considered for a specific term, applications must be received by the following dates:

Term	Application Date
Fall/December	Oct. 15
Spring/May	Feb. 15
Summer/July	June 15

SWIC Articulation Agreements:

SWIC has developed a number of 2+2 Agreements with four-year universities to allow for seamless transfer into specific majors. Please visit swic.edu/articulation to learn more about 2+2 Agreements. Most colleges and universities require a minimum grade of “C” or better in a course for transferability of coursework.

Important Transfer Information

Read the Course Description Guide (yellow section of the catalog) for more information on course content and requisites, which may be necessary for some courses.

If you KNOW where you are transferring:

- Transfer requirements vary by receiving institution.
- Plan your Associate in Science and transfer requirements with a SWIC academic advisor and use the transfer guide of the four-year institution you plan to attend.
- Refer to *Recommended Steps and Timeline to Transfer to Four-Year Institutions* in the front of this catalog.

If you DON’T KNOW where you are transferring:

- Plan your Associate in Science with a SWIC academic advisor.
- The **Associate in Science Degree Requirement Checklist** in the front of this section may be used as a GENERAL GUIDE; transfer requirements vary by receiving institution.
- Refer to *Recommended Steps and Timeline to Transfer to Four-Year Institutions* in the front of this catalog.

Please view additional transfer resources at swic.edu/articulation.

Associate in Engineering Science

Degree Requirements Checklist

swic.edu/engineering

Coordinator/Faculty: Dr. Mark Patty, ext. 5608 Email: mark.patty@swic.edu

Dean: Dr. Kimberly Cherry Vogt, ext. 5050 Email: kimberly.cherryvogt@swic.edu

Refer to the following AES Engineering Pre-Major for specific course requirements for each of the Engineering subplans. There are many engineering majors at 4-year colleges and universities. The Engineering subplans identify course requirements and recommendations for each of these major specializations. Because requirements vary at colleges and universities, it is important to select your courses with the assistance of the program coordinator and an academic advisor.

REQUIREMENTS OF ALL ENGINEERING SPECIALTIES (45 credit hours):

Communications (total of 9 semester credits): A minimum grade of “C” is required for ENG 101

ENG 101ENG 102COMM 151 OR 155

Mathematics (17 semester credits):

MATH 203MATH 204MATH 205MATH 290

Physical Sciences (13 semester credits):

CHEM 105PHYS 204PHYS 205

Social/Behavioral Science (3 semester credits, select from one of the following):

ECON 201ECON 202POLS 150

Human Relations OR Non-Western Course (3 semester credits):

ANTH 150HIST 114LIT 117POLS 241

ART 103HIST 115LIT 205SOC 220

ART 110HIST 117LIT 215SOC 230*

GEOG 202HIST 118LIT 216

HIST 101HIST 230MUS 110

HIST 102HIST 286PHIL 155

SOC 230 is the recommended course for this selection

ENGINEERING SUBPLAN SELECTIONS (15-27 credit hours):

Engineering Subplan Selections Using program subplans on the following pages, select appropriate engineering subplan selections from the offerings below (15-27 credits):

AGRI 121CHEM 106ENGR 264MATH 210

BIOL 100CHEM 201ENGR 271MATH 271

BIOL 101CHEM 202ENGR 275MATH 292

BIOL 102ENGR 103ES 102ORIE 101

BIOL 107ENGR 251MATH 171PHYS 206

BIOL 270ENGR 263MATH 191/BUS 205

General Education Selection Options within Engineering Subplan Selections:

Humanities and Fine Arts (0-3 credits):

ART 101MUS 101PHIL 151PHIL 152

FILM 115PHIL 150

Social and Behavioral Sciences (0-3 credits):

GEOG 152HIST 181PSYC 151SOC 153

HIST 180POLS 150

Human Wellbeing (0-2 credits):

HES 151HES 152HES 154HES 155

Engineering Pre-Major - Aerospace Engineering Subplan

Associate in Engineering Science Degree (AES1)

swic.edu/engineering

Coordinator/Faculty: Dr. Mark Patty, ext. 5608

Email: Mark.Patty@swic.edu

Dean: Dr. Kimberly Cherry Vogt, ext. 5050

Email: Kimberly.Cherryvogt@swic.edu

Aerospace Engineering is a broad, interdisciplinary field, and aerospace engineers create highly complex systems that apply the laws of physics and mathematics to topics of analysis and design of aerospace vehicles, including aircraft, missiles, and spacecraft. Aerospace engineers work in private and government defense, private space exploration companies, and aircraft manufacturing to design innovative and practical solutions for aviation needs. This program subplan provides a strong foundation in fundamental areas such as mathematics, physics, mechanics, dynamics, materials, and electrical systems. Graduates who plan to go on to a Bachelor’s degree in Aerospace Engineering will be well prepared to study aerodynamics, aircraft structures, flight dynamics and controls, and propulsion of aircraft and spacecraft.

Second Year

Fall Semester

MATH 205Analytic Geometry & Calculus III*

MATH 210Computer Programming for Engineers*

PHYS 205Physics - Heat, Elec. & Magentism*

ENGR 263Analytical Mechanics-Statics*

ENGR 103Engineering Graphics

Total Semester Credits

Semester Credits

4

3

4

3

4

18

Apply for Graduation Now

Second Year

Spring Semester

MATH 290Differential Equations*

ENGR 264Analytical Mechanic-Dynamics* OR

PHYS 206Physics-Light & Modern Physics*

ENGR 275Mechanics of Solids* OR

General Education Selection

ENGR 271Electrical Circuits OR

General Education Selection*

ECON 201Principles of Macroeconomics OR

ECON 202Principles of Microeconomics OR

POLS 150Introduction to American Government

Total Semester Credits

Semester Credits

3

3-4

3

3

3

3

15-16

64-65

Important Information

The following semester sequence is designed as a guide for students enrolled full time and is not intended as a required schedule. Students should take courses in progression following the appropriate requisites. For information on requisites, please refer to the Course Description Guide (yellow section) in this catalog.

*Indicates courses that must be taken in order.

Career Opportunities

A graduate of Associate of Engineering Science-Aerospace Engineering Subplan can find employment as:

- Aerospace Technician
- Aircraft Mechanic
- CAD Technician
- Inspector and Compliance Officer

A student who transfers to earn a Bachelor of Science in Aerospace Engineering can find employment as:

- Aerospace Engineer
- Aircraft and Spacecraft Design Engineer
- Avionics Engineer
- Design Engineer
- Electronics Engineer
- Flight Test Engineer
- Mechanical Engineer
- Structural engineer
- Systems Engineer

Associate in Science Degree
Aerospace Engineering Subplan

First Year

Fall Semester

MATH 203Analytic Geometry & Calculus I*

CHEM 105General Chemistry I*

ENG 101Rhetoric & Composition I*

Human Relations Selection

Total Semester Credits

Semester Credits

5

5

3

3

16

First Year

Spring Semester

MATH 204Analytic Geometry & Calculus II *

PHYS 204Physics - Mechanics*

ENG 102Rhetoric & Composition II

COMM 151Introduction to Public Speaking OR

COMM 155Interpersonal Communications

Total Semester Credits

Semester Credits

5

4

3

3

15

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SOUTHWESTERN ILLINOIS COLLEGE 2026-2027

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Engineering Pre-Major - Bioengineering Subplan

Associate in Engineering Science Degree (AES1)

swic.edu/engineering

Coordinator/Faculty: Dr. Mark Patty, ext. 5608
Email: Mark.Patty@swic.edu
Dean: Dr. Kimberly Cherry Vogt, ext. 5050
Email: Kimberly.Cherryvogt@swic.edu

Bioengineering is the application of experimental and analytical techniques based on the engineering sciences to support the development of biologics, materials, devices, implants, processes, and systems that advance biology and medicine and improve medical practice and health care. Beyond medicine, bioengineering also includes applications in biotechnology, agriculture, bioenergy, and environmental protection, where engineers design sustainable processes, biomufacturing systems, and engineered organisms for societal benefit. Bachelor's degrees in bioengineering vary widely in requirements. Students are encouraged to work with the program coordinator and their advisor early to develop an academic plan that will ensure transferability of coursework and timely degree completion.

Articulation Agreements

- SIU-Carbondale – B.S. Biomedical Engineering

Important Information

The following semester sequence is designed as a guide for students enrolled full time and is not intended as a required schedule. Students should take courses in progression following the appropriate requisites. For information on requisites, please refer to the *Course Description Guide* (yellow section) in this catalog.

Associate in Science Degree
Bioengineering Subplan

First Year		Semester Credits	
Fall Semester			
MATH	203	Analytic Geometry & Calculus I*	5
CHEM	105	General Chemistry I*	5
ENG	101	Rhetoric & Composition I*	3
BIOL	101	Principles of Biology I* OR	
AGRI	121	Soil Science	4
Total Semester Credits		17	

First Year		Semester Credits	
Spring Semester			
MATH	204	Analytic Geometry & Calculus II *	5
CHEM	106	General Chemistry II*	5
PHYS	204	Physics - Mechanics*	4
ENG	102	Rhetoric & Composition II	3
Total Semester Credits		17	

Second Year		Semester Credits	
Fall Semester			
MATH	205	Analytic Geometry & Calculus III*	4
MATH	171	Compuer Science I-JAVA* OR	
MATH	210	Computer Programming for Engineers* OR	
ENGR	103	Engineering Graphics	3-4
CHEM	201	Organic Chemistry I* OR	
ENGR	263	Analytical Mechanics-Statics*	3-5
PHYS	205	Physics - Heat, Elec. & Magentism*	4
COMM	151	Introduction to Public Speaking OR	
COMM	155	Interpersonal Communications	3
Total Semester Credits		17-20	

Apply for Graduation Now

Second Year		Semester Credits	
Spring Semester			
MATH	290	Differential Equations*	3
CHEM	202	Organic Chemistry II OR	
ENGR	264	Analytical Mechanic-Dynamics* OR	
ENGR	275	Mechanics of Solids OR	
BIOL	270	Genetics	3-5
PHYS	206	Physics-Light & Modern Physics* OR	
General Education Selection		3-4	
Human Relations Selection		3	
ECON	201	Principles of Macroeconomics OR	
ECON	202	Principles of Microeconomics OR	
POLS	150	Introduction to American Government	3
Total Semester Credits		15-18	
Total Credits		66-72	

*Indicates courses that must be taken in order.

Career Opportunities

A graduate of Associate of Engineering Science-Bioengineering Subplan can find employment as:

- Biomedical Technician
- Equipment Technician
- Manufacturing and Process Engineering Technician
- Research and Development Technician

A student who transfers to earn a Bachelor of Science in Bioengineering can find employment as:

- Biochemical Engineer
- Bioinstrumentation Engineer
- Biomaterials Engineer
- Biomechanics Engineer
- Clinical Engineer
- Genetic Engineer
- Rehabilitation Engineer

Engineering Pre-Major - Chemical Engineering Subplan

Associate in Engineering Science Degree (AES1)

swic.edu/engineering

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Chemical engineering is the branch of engineering that applies principles of chemistry, physics, mathematics, and biology to design, develop, and optimize processes that transform raw materials into valuable products. Chemical engineers design and manage processes for a wide range of industries, including pharmaceuticals, fuels, food, plastics, electronics, and advanced materials, while integrating modern technologies such as process modeling, computer-aided design, and biotechnology. Students will be prepared to pursue a Bachelor's degree in Chemical Engineering with the foundational mathematics, chemistry, and physics knowledge required to learn how to address complex energy, health, and environmental challenges, creating innovative solutions that improve quality of life and advance sustainable development.

Important Information

The following semester sequence is designed as a guide for students enrolled full time and is not intended as a required schedule. Students should take courses in progression following the appropriate requisites. For information on requisites, please refer to the *Course Description Guide* (yellow section) in this catalog.

Associate in Science Degree
Chemical Engineering Subplan

First Year		Semester Credits	
Fall Semester			
MATH	203	Analytic Geometry & Calculus I*	5
CHEM	105	General Chemistry I*	5
ENG	101	Rhetoric & Composition I*	3
Human Relations Selection		3	
Total Semester Credits		16	

First Year		Semester Credits	
Spring Semester			
MATH	204	Analytic Geometry & Calculus II *	5
CHEM	106	General Chemistry II*	5
PHYS	204	Physics - Mechanics*	4
ENG	102	Rhetoric & Composition II	3
Total Semester Credits		17	

Second Year		Semester Credits	
Fall Semester			
MATH	205	Analytic Geometry & Calculus III*	4
MATH	171	Compuer Science I-JAVA* OR	
MATH	210	Computer Programming for Engineers*	3-4
CHEM	201	Organic Chemistry I*	5
PHYS	205	Physics - Heat, Elec. & Magentism*	4
Total Semester Credits		16-17	

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Second Year		Semester Credits	
Spring Semester			
MATH	290	Differential Equations*	3
CHEM	202	Organic Chemistry II*	5
PHYS	206	Physics-Light & Modern Physics*	4
COMM	151	Introduction to Public Speaking OR	
COMM	155	Interpersonal Communications	3
ECON	201	Principles of Macroeconomics OR	
ECON	202	Principles of Microeconomics OR	
POLS	150	Introduction to American Government	3
Total Semester Credits		18	
Total Credits		67-68	

Career Opportunities

A graduate of Associate of Engineering Science-Chemical Engineering Subplan can find employment as:

- Chemical technician
- CAD technician
- Environmental technician
- Laboratory technician

A student who transfers to earn a Bachelor of Science in Chemical Engineering can find employment as:

- Biotechnologist
- Chemical engineer
- Energy engineer
- Environmental engineer
- Geochemist
- Materials engineer
- Metallurgist
- Nuclear engineer
- Petroleum engineer
- Product/process development scientist
- Quality control engineer

Engineering Pre-Major - Civil Engineering Subplan

Associate in Engineering Science Degree (AES1)

swic.edu/engineering

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One of the oldest and broadest engineering fields, Civil Engineering focuses on the design, construction, and maintenance of the physical and natural environment. It includes public and private infrastructure such as roads, bridges, buildings, dams, airports, pipelines, railways, and water and sewage systems. Drawing on mathematics, physics, materials science, and environmental studies, civil engineering applies scientific methods to create safe, sustainable, and efficient structures and systems. This program subplan provides a strong foundation in fundamental areas such as mathematics, physics, mechanics, dynamics, and materials. Graduates who go on to pursue a Bachelor's degree will be well prepared to learn to plan, design, and manage projects from concept to completion, ensuring they meet technical, social, and environmental standards.

Articulation Agreements

- SIU-Carbondale – B.S. Civil Engineering
- SIU-Edwardsville – B.S. Civil Engineering

Important Information
The following semester sequence is designed as a guide for students enrolled full time and is not intended as a required schedule. Students should take courses in progression following the appropriate requisites. For information on requisites, please refer to the *Course Description Guide* (yellow section) in this catalog.

Associate in Science Degree
Civil Engineering Subplan

First Year			Semester Credits
Fall Semester			
MATH	203	Analytic Geometry & Calculus I*	5
CHEM	105	General Chemistry I*	5
ENG	101	Rhetoric & Composition I*	3
ENGR	103	Engineering Graphics	4
Total Semester Credits			17

First Year			Semester Credits
Spring Semester			
MATH	204	Analytic Geometry & Calculus II *	5
PHYS	204	Physics - Mechanics*	4
ENG	102	Rhetoric & Composition II	3
COMM	151	Introduction to Public Speaking OR	
COMM	155	Interpersonal Communications	3
Human Relations Selection			3
Total Semester Credits			18

Second Year			Semester Credits
Fall Semester			
MATH	205	Analytic Geometry & Calculus III*	4
MATH	210	Computer Programming for Engineers*	3
PHYS	205	Physics - Heat, Elec. & Magentism*	4
ENGR	263	Analytical Mechanics-Statics*	3
ECON	201	Principles of Macroeconomics OR	
ECON	202	Principles of Microeconomics OR	
POLS	150	Introduction to American Government	3
Total Semester Credits			17

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Second Year			Semester Credits
Spring Semester			
MATH	290	Differential Equations* OR	
PHYS	206	Physics-Light & Modern Physics*	3-4
ENGR	264	Analytical Mechanics-Dynamics*	3
ENGR	275	Mechanics of Solids*	3
ENGR	251	Surveying Fundamentals	3
BIOL	100	Introduction to Biology OR	
BIOL	101	Principles of Biology I OR	
BIOL	107	Human Genetics OR	
CHEM	106	General Chemistry II OR	
ES	102	Physical Geology	3-5
Total Semester Credits			15-18
Total Credits			67-70

Career Opportunities

A graduate of Associate of Engineering Science-Civil Engineering Subplan can find employment as:

- Engineering Technician
- CAD Technician
- Engineering Apprentice
- Land Surveyor

A student who transfers to earn a Bachelor of Science in Civil Engineering can find employment as:

- Construction engineer
- Design engineer
- Environmental engineer
- Geotechnical engineer
- Marine engineer
- Structural engineer
- Transportation engineer
- Water resource engineer

Engineering Pre-Major - Computer Engineering Subplan

Associate in Engineering Science Degree (AES1)

swic.edu/engineering

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Computer Engineering is an interdisciplinary field that combines electrical engineering and computer science to design, develop, and maintain computer hardware and software systems. Computer engineers build the future by creating mobile applications, programs, routers, and circuit boards that keep modern civilization running. Hardware engineers develop the blueprints for processors, networks, and memory devices, while software engineers write the code that builds programs for end users. Graduates are prepared with foundational knowledge in mathematics and physics necessary to continue their education in a bachelor's degree program in computer engineering or a related field.

Articulation Agreements

- SIU-Carbondale – B.S. Computer Engineering
- SIU-Edwardsville – B.S. Computer Engineering

Important Information
The following semester sequence is designed as a guide for students enrolled full time and is not intended as a required schedule. Students should take courses in progression following the appropriate requisites. For information on requisites, please refer to the *Course Description Guide* (yellow section) in this catalog.

Associate in Science Degree
Computer Engineering Subplan

First Year			Semester Credits
Fall Semester			
MATH	203	Analytic Geometry & Calculus I*	5
CHEM	105	General Chemistry I	5
ENG	101	Rhetoric & Composition I*	3
Human Relations Selection			3
Total Semester Credits			16

First Year			Semester Credits
Spring Semester			
MATH	204	Analytic Geometry & Calculus II *	5
PHYS	204	Physics - Mechanics*	4
ENG	102	Rhetoric & Composition II	
COMM	151	Introduction to Public Speaking OR	
COMM	155	Interpersonal Communications	3
Total Semester Credits			15

Second Year			Semester Credits
Fall Semester			
MATH	205	Analytic Geometry & Calculus III*	4
PHYS	205	Physics - Heat, Elec. & Magnetism*	4
MATH	171	Computer Science I-JAVA* OR	
MATH	210	Computer Programming for Engineers* OR	
ENGR	263	Analytical Mechanics-Statics*	3-4
ECON	201	Principles of Macroeconomics OR	
ECON	202	Principles of Microeconomics OR	
POLS	150	Introduction to American Government	3
Total Semester Credits			14-15

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Second Year			Semester Credits
Spring Semester			
MATH	290	Differential Equations* OR	3
ENGR	264	Analytical Mechanics-Dynamics* OR	
MATH	271	Computer Science II - JAVA OR	
PHYS	206	Physics-Light & Modern Physics*	3-4
ENGR	271	Electrical Circuits OR	
PHYS	206	Physics-Light & Modern Physics	3-4
General Education Selection			3
BIOL	100	Introduction to Biology OR	
BIOL	101	Principles of Biology I OR	
BIOL	107	Human Genetics OR	3-4
Total Semester Credits			15-18
Total Credits			60-64

Career Opportunities

A graduate of Associate of Engineering Science-Computer Engineering Subplan can find employment as:

- Computer Technician
- IT Support Specialist
- Database/Network/Systems Administrator
- Information Security Analyst

A student who transfers to earn a Bachelor of Science in Computer Engineering can find employment as:

- Software Developer/Engineer
- Computer Programmer
- Computer Systems Analyst
- Embedded Systems Engineer
- Cloud Computing Engineer
- Computer Hardware Engineer
- Network Engineer
- Platform Engineer
- Data Engineer
- Machine Learning Engineer
- Cybersecurity Analyst/Specialist

Engineering Pre-Major - Electrical Engineering Subplan

Associate in Engineering Science Degree (AES1)

swic.edu/engineering

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Electrical Engineering is the study and application of electricity, electronics, and electromagnetism for the design, development, testing, and implementation of systems that power and connect to the modern world. Electrical and Electronic Engineers design, develop, and supervise the manufacture and maintenance of electrical and electronic equipment, components, and systems. This program subplan provides a strong foundation in fundamental areas of mathematics and physics. Graduates are well-prepared to pursue a Bachelor’s degree in Electrical Engineering and learn to analyze and design circuits, power systems, and communication networks.

Articulation Agreements

- SIU-Carbondale – B.S. Electrical Engineering
- SIU-Edwardsville – B.S. Electrical Engineering

Important Information
The following semester sequence is designed as a guide for students enrolled full time and is not intended as a required schedule. Students should take courses in progression following the appropriate requisites. For information on requisites, please refer to the *Course Description Guide* (yellow section) in this catalog.

Associate in Science Degree
Electrical Engineering Subplan

First Year			
Fall Semester		Semester Credits	
MATH	203	Analytic Geometry & Calculus I*	5
CHEM	105	General Chemistry I	5
ENG	101	Rhetoric & Composition I*	3
Human Relations Selection			3
Total Semester Credits			16
First Year			
Spring Semester		Semester Credits	
MATH	204	Analytic Geometry & Calculus II *	5
PHYS	204	Physics - Mechanics*	4
ENG	102	Rhetoric & Composition II	3
COMM	151	Introduction to Public Speaking OR	
COMM	155	Interpersonal Communications	3
Total Semester Credits			15

Second Year			
Fall Semester		Semester Credits	
MATH	205	Analytic Geometry & Calculus III*	4
MATH	171	Computer Science I-JAVA* OR	
MATH	210	Computer Programming for Engineers* OR	
ENGR	263	Analytical Mechanics-Statics*	3-4
PHYS	205	Physics - Heat, Elec. & Magentism*	4
ECON	201	Principles of Macroeconomics OR	
ECON	202	Principles of Microeconomics OR	
POLS	150	Introduction to American Government	3
Total Semester Credits			14-15

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Second Year			
Spring Semester		Semester Credits	
MATH	290	Differential Equations*	3
PHYS	206	Physics-Light & Modern Physics* OR	
General Education Selection			3-4
ENGR	271	Electrical Circuits* OR	
MATH	292	Linear Algebra*	3
BIOL	100	Introduction to Biology OR	
BIOL	101	Principles of Biology I OR	
BIOL	107	Human Genetics OR	
General Education Selection			3-4
General Education Selection			3
Total Semester Credits			15-17
Total Credits			60-63

Career Opportunities

A graduate of Associate of Engineering Science-Electrical Engineering Subplan can find employment as:

- Engineering Technician
- CAD Technician
- Electrical Designer
- Instrumentation Technician

A student who transfers to earn a Bachelor of Science in Electrical Engineering can find employment as:

- Aerospace Electrical Engineer
- Artificial Intelligence and Machine Learning Engineer
- Controls Engineer
- Electrical Design Engineer
- Electronics Engineer
- Power Systems Engineer
- Robotics Engineer
- Telecommunications Engineer
- Test Engineer

Engineering Pre-Major - Industrial Engineering Subplan

Associate in Engineering Science Degree (AES1)

swic.edu/engineering

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Industrial Engineering is a multidisciplinary field focused on optimizing processes, boosting productivity, and enhancing quality and safety. Using analytical modeling, data-driven decisions, and problem-solving techniques, industrial engineers improve performance across manufacturing, healthcare, logistics, transportation, and service industries. This program subplan provides a strong foundation in fundamental areas such as mathematics, physics, mechanics, materials, and electrical systems. Graduates who plan to go on to a Bachelor’s degree in Industrial Engineering will be well prepared to study manufacturing and production systems, facility planning, quality control, and operations research.

Articulation Agreements

- SIU-Edwardsville – B.S. Industrial Engineering

Important Information
The following semester sequence is designed as a guide for students enrolled full time and is not intended as a required schedule. Students should take courses in progression following the appropriate requisites. For information on requisites, please refer to the *Course Description Guide* (yellow section) in this catalog.

Associate in Science Degree
Industrial Engineering Subplan Map

First Year			
Fall Semester		Semester Credits	
MATH	203	Analytic Geometry & Calculus I*	5
CHEM	105	General Chemistry I	5
ENG	101	Rhetoric & Composition I*	3
ENGR	103	Engineering Graphics	4
Total Semester Credits			17
First Year			
Spring Semester		Semester Credits	
MATH	204	Analytic Geometry & Calculus II *	5
PHYS	204	Physics - Mechanics*	4
ENG	102	Rhetoric & Composition II	3
COMM	151	Introduction to Public Speaking OR	3
COMM	155	Interpersonal Communications	
Total Semester Credits			15

Second Year			
Fall Semester		Semester Credits	
MATH	205	Analytic Geometry & Calculus III*	4
MATH	171	Computer Science I-JAVA* OR	
MATH	210	Computer Programming for Engineers*	3-4
PHYS	205	Physics - Heat, Elec. & Magnetism*	4
ENGR	263	Analytical Mechanics-Statics*	3
Human Relations Selection			3
Total Semester Credits			17-18

Apply for Graduation Now

Second Year			
Spring Semester		Semester Credits	
MATH	290	Differential Equations*	3
ENGR	264	Analytical Mechanics-Dynamics* OR	
PHYS	206	Physics-Light & Modern Physics*	3-4
ENGR	271	Electrical Circuits* OR	
PHYS	206	Physics-Light & Modern Physics* OR	
General Education Selection			3-4
ENGR	275	Mechanics of Solids* OR	
General Education Selection			3
ECON	201	Principles of Macroeconomics OR	
ECON	202	Principles of Microeconomics OR	
POLS	150	Introduction to American Government	3
Total Semester Credits			15-17
Total Credits			64-67

Career Opportunities

A graduate of Associate of Engineering Science-Industrial Engineering Subplan can find employment as:

- Engineering Technician
- Industrial engineering technician
- Maintenance technician
- Quality control technician

A student who transfers to earn a Bachelor of Science in Industrial Engineering can find employment as:

- Human factors engineer
- Ergonomics engineer
- Facility planner
- Manufacturing engineer
- Quality engineer
- Supply chain engineer
- Systems engineer
- Validation engineer

Engineering Pre-Major - Mechanical Engineering Subplan

Associate in Engineering Science Degree (AES1)

swic.edu/engineering

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Mechanical Engineering is a versatile and wide-ranging field focused on the design, analysis, and development of systems involving motion, energy, and force to create and improve machines and devices. It combines core principles from physics, mathematics, and materials science to solve real-world engineering challenges and drive innovation across industries. This program subplan provides a strong foundation in fundamental areas such as mechanics, dynamics, thermodynamics, materials science, structural analysis, and electrical systems. Graduates are well-prepared to pursue a Bachelor's degree in Mechanical Engineering—contributing to the technologies and infrastructure that shape everyday life.

Articulation Agreements

- SIU-Carbondale – B.S. Mechanical Engineering
- SIU-Edwardsville – B.S. Mechanical Engineering

Important Information

The following semester sequence is designed as a guide for students enrolled full time and is not intended as a required schedule. Students should take courses in progression following the appropriate requisites. For information on requisites, please refer to the *Course Description Guide* (yellow section) in this catalog.

Associate in Science Degree
Mechanical Engineering Subplan

First Year			
Fall Semester		Semester Credits	
MATH	203	Analytic Geometry & Calculus I*	5
CHEM	105	General Chemistry I*	5
ENG	101	Rhetoric & Composition I*	3
Human Relations Selection			3
Total Semester Credits			16
First Year			
Spring Semester		Semester Credits	
MATH	204	Analytic Geometry & Calculus II *	5
PHYS	204	Physics - Mechanics*	4
ENG	102	Rhetoric & Composition II	3
COMM	151	Introduction to Public Speaking OR	
COMM	155	Interpersonal Communications	3
Total Semester Credits			15

Second Year			
Fall Semester		Semester Credits	
MATH	205	Analytic Geometry & Calculus III*	4
MATH	210	Computer Programming for Engineers* OR	
General Education Selection			3
PHYS	205	Physics - Heat, Elec. & Magnetism*	4
ENGR	263	Analytical Mechanics-Statics*	3
ENGR	103	Engineering Graphics	4
Total Semester Credits			18

Apply for Graduation Now

Second Year			
Spring Semester		Semester Credits	
MATH	290	Differential Equations*	3
ENGR	264	Analytical Mechanics-Dynamics* OR	
PHYS	206	Physics-Light & Modern Physics*	3-4
ENGR	271	Electrical Circuits* OR	
PHYS	206	Physics-Light & Modern Physics*	3-4
ENGR	275	Mechanics of Solids* OR	
BIOL	100	Introduction to Biology OR	
BIOL	101	Principles of Biology I OR	
BIOL	107	Human Genetics OR	
CHEM	106	General Chemistry II*	3-5
ECON	201	Principles of Macroeconomics OR	
ECON	202	Principles of Microeconomics OR	
POLS	150	Introduction to American Government	3
Total Semester Credits			15-19
Total Credits			64-68

Career Opportunities

A graduate of Associate of Engineering Science-Mechanical Engineering Subplan can find employment as:

- Engineering Technician
- CAD Technician or Draftsman
- Mechanical Designer
- Quality Assurance Technician

A student who transfers to earn a Bachelor of Science in Civil Engineering can find employment as:

- Automotive Engineer
- Construction Engineer
- HVAC Engineer
- Mechanical Design Engineer
- Piping Engineer
- Robotics Engineer
- Structural Engineer
- Thermal Systems Engineer

Engineering Pre-Major - Mechatronics & Robotics Engineering Subplan

Associate in Engineering Science Degree (AES1)

swic.edu/engineering

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Mechatronics and Robotics Engineering is an interdisciplinary field combining mechanical, electrical, computer, and control systems engineering to design intelligent and automated technologies. Mechatronics focuses on hardware and software integration in complete systems, while Robotics centers on autonomous machines capable of sensing, reasoning, and acting. This program subplan provides a strong foundation in fundamental areas such as mathematics, physics, mechanics, dynamics, materials, and electrical systems. Graduates who plan to go on to a Bachelor's degree in Mechatronics and Robotics Engineering will be well prepared to learn to build smart machines that integrate mechanical components with electronics, sensors, actuators, and computer control.

Articulation Agreements

- SIU-Edwardsville – B.S. Mechatronics & Robotics Engineering

Important Information

The following semester sequence is designed as a guide for students enrolled full time and is not intended as a required schedule. Students should take courses in progression following the appropriate requisites. For information on requisites, please refer to the *Course Description Guide* (yellow section) in this catalog.

Associate in Science Degree
Mechatronics & Robotics Engineering Subplan

First Year			
Fall Semester		Semester Credits	
MATH	203	Analytic Geometry & Calculus I*	5
CHEM	105	General Chemistry I*	5
ENG	101	Rhetoric & Composition I*	3
Human Relations Selection			3
Total Semester Credits			16
First Year			
Spring Semester		Semester Credits	
MATH	204	Analytic Geometry & Calculus II *	5
PHYS	204	Physics - Mechanics*	4
ENG	102	Rhetoric & Composition II	3
COMM	151	Introduction to Public Speaking OR	
COMM	155	Interpersonal Communications	3
Total Semester Credits			15

Second Year			
Fall Semester		Semester Credits	
MATH	205	Analytic Geometry & Calculus III*	4
MATH	210	Computer Programming for Engineers*	3
PHYS	205	Physics - Heat, Elec. & Magnetism*	4
ENGR	263	Analytical Mechanics-Statics*	3
ECON	201	Principles of Macroeconomics OR	
ECON	202	Principles of Microeconomics OR	
POLS	150	Introduction to American Government	3
Total Semester Credits			17

Apply for Graduation Now

Second Year			
Spring Semester		Semester Credits	
MATH	290	Differential Equations*	3
MATH	292	Linear Algebra*	3
ENGR	264	Analytical Mechanics-Dynamics*	3
ENGR	271	Electrical Circuits*	3
ENGR	275	Mechanics of Solids*	3
Total Semester Credits			15
Total Credits			63

Career Opportunities

A graduate of Associate of Engineering Science-Mechatronics & Robotics Engineering Subplan can find employment as:

- Development engineer
- Mechanical design associate
- Mechatronics and Robotics technician

A student who transfers to earn a Bachelor of Science in Mechatronics & Robotics Engineering can find employment as:

- AI developer
- Automation engineer
- Control systems designer
- Mechatronics engineer
- Robotics engineer
- Robot programmer

Engineering Pre-Major - Nuclear Engineering Subplan

Associate in Engineering Science Degree (AES1)

swic.edu/engineering

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Nuclear engineers support safe and effective nuclear technologies by advancing reactor designs, enhancing safety practices, developing medical and industrial applications, enabling space and naval propulsion, and managing radioactive materials and waste. Major areas include nuclear power generation, radiation detection and measurement, health physics, nuclear security and nonproliferation, propulsion, and medical and industrial uses of radiation. This program subplan provides a strong foundation in fundamental areas such as mathematics, physics, mechanics, dynamics, materials, and electrical systems. Graduates who plan to go on to a bachelor's degree in nuclear engineering will be well prepared to learn to analyze and design nuclear systems, understand radiation behavior, apply safety and regulatory frameworks, and use computational and experimental tools to solve engineering problems.

Important Information

The following semester sequence is designed as a guide for students enrolled full time and is not intended as a required schedule. Students should take courses in progression following the appropriate requisites. For information on requisites, please refer to the *Course Description Guide* (yellow section) in this catalog.

Associate in Science Degree Nuclear Engineering Subplan

First Year

Fall Semester		Semester Credits
MATH	203 Analytic Geometry & Calculus I*	5
CHEM	105 General Chemistry I*	5
ENG	101 Rhetoric & Composition I*	3
Human Relations Selection		3
Total Semester Credits		16

First Year

Spring Semester		Semester Credits
MATH	204 Analytic Geometry & Calculus II *	5
PHYS	204 Physics - Mechanics*	4
ENG	102 Rhetoric & Composition II	3
COMM	151 Introduction to Public Speaking OR	
COMM	155 Interpersonal Communications	3
Total Semester Credits		15

Second Year

Fall Semester		Semester Credits
MATH	205 Analytic Geometry & Calculus III*	4
MATH	210 Computer Programming for Engineers*	3
PHYS	205 Physics - Heat, Elec. & Magnetism*	4
ENGR	263 Analytical Mechanics-Statics*	3
General Education Selection		3
Total Semester Credits		17

Apply for Graduation Now

Second Year

Spring Semester		Semester Credits
MATH	290 Differential Equations*	3
ENGR	264 Analytical Mechanics-Dynamics*	3
ENGR	275 Mechanics of Solids	3
ENGR	271 Electrical Circuits* OR	
PHYS	206 Physics-Light & Modern Physics*	3-4
ECON	201 Principles of Macroeconomics OR	
ECON	202 Principles of Microeconomics OR	
POLS	150 Introduction to American Government	3
Total Semester Credits		15-16
Total Credits		63-64

Career Opportunities

A graduate of Associate of Engineering Science-Nuclear Engineering Subplan can find employment as:

- Radiation protection apprentice
- Instrument and controls electronics technician apprentice
- Nuclear welder
- Nuclear electrician

A student who transfers to earn a Bachelor of Science in Nuclear Engineering can find employment as:

- Atomic process engineer
- Control and instrument engineer
- Materials engineer
- Nuclear radiation engineer
- Nuclear medicine technologist
- Nuclear safety engineer
- Nuclear steam supply system engineer
- Nuclear weapons engineer
- Radiation engineer
- Reactor engineer