

Associate in Engineering Science

Program Code: AES1

Description:

An Associate in Engineering Science 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 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 65 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 101 Requirement:

All students pursuing transfer degrees (AA, AS, AFA, AES) are required to enroll in English 101 or (if applicable) an English 101 requisite within their first 24-30 semester credits of enrollment.

Transfer Resources:

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

SWIC 2+2 Agreements:

SWIC has developed a number of 2+2 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 2+2 Agreements.

Human Relations:

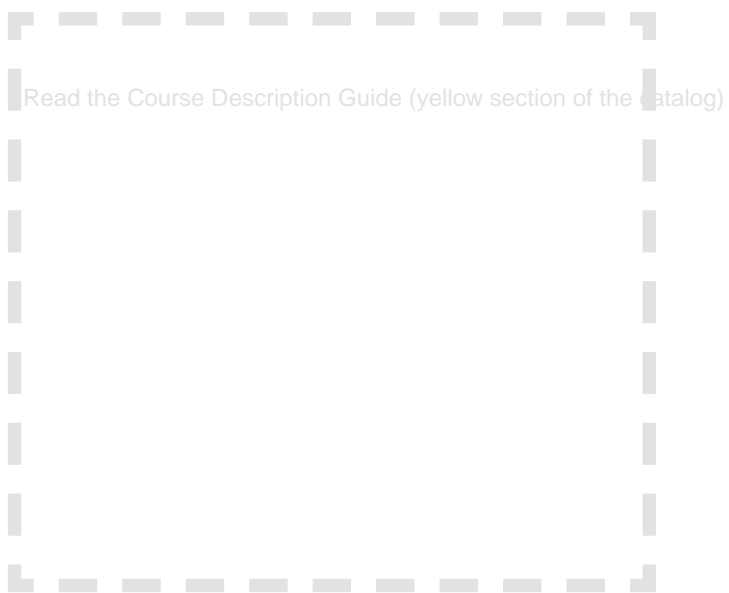
One of the following courses must be completed. The course that is selected may also be applied toward the Humanities or Social/Behavioral Science General Education requirement as applicable. For reference, these courses are listed in **white** print in the general education areas.

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



Chemistry Pre-Major Associate in Science Degree

swic.edu/chemistry

Department Chair: Mitch Robertson

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

Computer Science Pre-Major Associate in Science Degree

swic.edu/computer-science

(August-May);

Department Chair: Keven Hansen

Assistant Chair: Jaime Manche

(June-July);

Department Chair: Jaime Manche

Assistant Chair: Melissa Rossi

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.

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 Institution 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 Institution in the front of this catalog.

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.

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) 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 Economics I (Macro) and
ECON 202 Principles of Economics II (Micro)
2. 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
3. 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
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 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

Mathematics Pre-Major Associate in Science Degree

swic.edu/math

(August-May);

Department Chair: Keven Hansen

Assistant Chair: Jaime Manche

(June-July);

Department Chair: Jaime Manche

Assistant Chair: Melissa Rossi

As society has become more technical, many professions are requiring additional mathematical skills. Some of the fastest growing and highest paying f

Physics Pre-Major Associate in Science Degree

swic.edu/physics

Department Chair: Mitch Robertson

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

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 Institution 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 Institution in the front of this catalog.

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-Medicine Pre-Major Associate in Science Degree

swic.edu/pre-med

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.

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.

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Pre-Pharmacy Pre-Major Associate in Science Degree

swic.edu/pre-pharmacy

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.

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 Institution 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 Institution in the front of this catalog.

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 Economics I (Macro) 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.

