Engineering Science

Degree Awarded: Associate in Science

Recommended Course Sequence

First Semester-Fall		Credits
ENG 101	Freshman English 1	3
CHM 105	General Chemistry 1	4
PHY 103	Physics for Science & Eng. 1	4
MAT 205	Calculus 1	4
EGR 101	Engineering 1	3
PES 100	Concepts of Physical Wellness	1
Second Semester-Spring		
ENG 102	Freshman English 2	3
PHY 104	Physics for Science & Eng. 2	4
CHM 106	General Chemistry 2	4
MAT 206	Calculus 2	4
EGR 102	Engineering 2	3
PES ____	Physical Education (two)	1
Third Semester-Fall		
_____	SUNY Social Science (GE 3)	3
PHY 203	Physics for Science & Eng. 3	4
MAT 207	Calculus 3	4
EGR 205	Mechanics 1 (Statics)	4
_____	Engineering Elective	3
Fourth Semester-Spring		
_____	SUNY American History (GE 4)	3
MAT 214	Differential Equations &Series	4
EGR 206	Mechanics 2 (Dynamics)	4
_____	Engineering Elective	3
_____	Engineering Elective	2/3

Total Credits: 72-73

Note: Students must take a minimum of three courses (eight credits) from the following depending on their area of specialization:
Thermodynamics (EGR 214) summer
Solid Mechanics (EGR 220) spring
Circuit Theory (EGR 212) spring
Modern Physics (PHY 204)
Materials Science (EGR 218) fall
Linear Algebra (MAT 209) fall/summer
Engineering Computations (EGR 216)
Students majoring in chemical, biological or environmental engineering should plan to take:
Organic Chemistry I (CHM201) and
Organic Chemistry II (CHM202)
Computer Engineering majors should take:
Computer Science II (CSC 102) and
Data Structures (CSC 201).
(Organic Chemistry II or Data Structures may be substituted for Mechanics II with the permission of the department chair.) Proper advising is crucial for proper course selection.

Program Description

The Associate in Science degree program in Engineering Science is designed specifically to enable students to transfer, with junior status, to the upper-level engineering college or university of their choice, where they can complete the Bachelor of Science degree in Engineering. As such, the program provides the same core courses that would be encountered in the first two years of study at most four-year institutions offering engineering degrees in the following disciplines:

- Aeronautical Engineering
- Architectural Engineering
- Biological Engineering
- Chemical Engineering, ChE
- Civil Engineering, CE
- Computer Engineering
- Electrical Engineering, EE
- Environmental Engineering
- Geological Engineering
- Materials Engineering
- Mechanical Engineering, ME
- Nuclear Engineering

Core courses in calculus, chemistry, engineering physics and engineering science constitute the nucleus of this program. Selected courses in the liberal arts support and enhance this central core.

To begin the two year program, students must be at the mathematical level of Calculus 1 (MAT 205) or must have completed either College Trigonometry* (MAT 122) or Pre-Calculus Mathematics* (MAT 131).

Students who do not meet the above requirements should not be discouraged. Many students, who have either missed some foundational courses or who have family/job commitments, opt to take the extended program, which prepares them for Calculus 1 (MAT 205). Although this path will require more than four semesters, it enables students to reach their educational goal and to work as professional engineers in the above-mentioned fields. Students taking the extended option should meet with their advisor to arrange a planned course of study.

The Engineering Science program at SUNY Orange strives to form a student's ability to think critically in real time, to develop a professional work ethic built on cooperation and group problem solving, and to provide the rigorous conceptual and ethical framework required in a field where professional competence is expected.

**These prerequisite courses may be taken in the summer.*

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Admission Criteria

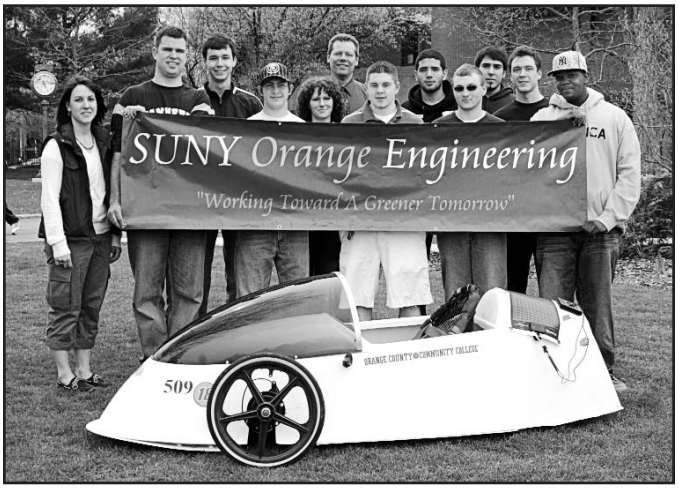
Admission to this program requires that students be high school graduates or have high school equivalency diplomas (GEDs). If students are not high school graduates, they may be eligible for admission to the College's 24 Credit Hour Program. If students are home schooled, they may be eligible for admission. (See pages 7 through 13 for more details on the admission process for all applicants.)

Students must have tested into or completed Calculus 1 (MAT 205) to begin progress toward this degree. If recent high school graduates have concerns about their mathematics preparation they should consider taking Pre-Calculus Mathematics (MAT 109) during the summer before their entrance into the program.

Student Learning Outcomes

Students will:

- demonstrate literacy in the basic mathematical, computational and scientific languages of engineering science.
- demonstrate a mastery of communication skills, both written and oral, especially in their applications to Engineering Science.
- demonstrate literacy in a programming language and in computer assisted techniques for engineering design.
- plan, organize and implement laboratory experiments and prepare a formal detailed laboratory report of findings.
- set up and solve Engineering Science problems, using advanced mathematical techniques, with and without computers.
- conduct herself or himself in a professional manner consistent with acceptable standards and ethics.



Career Opportunities

- private sector engineering firms
- research and development opportunities in private and public sector
- engineering positions in city, state or federal agencies
- excellent background for other fields, i.e. law or medicine

Transfer Opportunities

SUNY Orange has special relationships with upper-level colleges and universities for transfer.

These transfer institutions include:

- Clarkson University
- Manhattan College
- New Mexico Tech
- Ohio State University
- Penn State University
- Rensselaer Polytechnic University (RPI)
- Stevens Institute of Technology
- SUNY Binghamton
- SUNY Buffalo
- SUNY New Paltz.
- SUNY Stony Brook
- Syracuse University
- University of Colorado
- University of Dayton
- University of Illinois

Contact Information

Science, Engineering and Architecture Department Chair
341-4571
Admissions Office
(845) 341-4030