

Engineering Science

The Engineering Science curriculum provides a foundation for further study toward the bachelor's degree in engineering. As such, it parallels the first two years of engineering programs offered by major universities and is applicable to any engineering discipline. Students planning to pursue baccalaureate degrees in aerospace, biomedical, chemical, civil, electrical, industrial, mechanical, nuclear or petroleum engineering select this program. Students with other technical interests may consider other technological curricula.

STUDENT LEARNING OUTCOMES:

Upon completion of this program graduates will be able to:

- Solve problems in algebra, trigonometry and calculus.
- Solve basic problems in science and engineering.
- Work in teams to implement projects.
- Use computers for data acquisition and instrumentation control.
- Communicate technical information using written, verbal and graphical presentations.
- Transfer as engineering majors to bachelor's degree-granting institutions.

PROGRAM ENTRY REQUIREMENTS:

Engineering Science is a demanding curriculum. Interested high school students are urged to complete a year of advanced high school mathematics that includes trigonometry and elementary functions. They should also complete a year each of high school chemistry and physics.

Students can be admitted to the program by successfully completing MATH 161 (Precalculus I) with a grade of at least a "C." Students can also be admitted if they have at least MATH 162 (Precalculus II) placement. Students who have not taken high school physics should take PHYS 105 (Survey of Physics) or PHYS 111 (General Physics I).

PROGRAM OF STUDY AND GRADUATION REQUIREMENTS:

To qualify for the Associate in Science (A.S.) degree in Engineering Science, a minimum of 71 credits and a grade point average of 2.0 are required.

PREPARATION FOR TRANSFER:

The College has established articulation and dual admission agreements with area colleges and universities including Drexel and Temple universities. In the Career and

Transfer Resource Center, room W2-3, and the Counseling Center, room W2-2, students may obtain information and guidance in selecting elective courses required by their transfer institutions.

ENGINEERING SCIENCE

Course Number and Name	Prerequisites and Corequisites	Credits	Gen Ed Req.
FIRST SEMESTER			
ENGR 102 – Engineering Design and Laboratory I	MATH 162	4	
MATH 171 – Calculus I	MATH 161 – 162	4	Mathematics
CHEM 121 – College Chemistry I	CHEM 110 (or H.S. chemistry)	4	
ENGL 101 – English Composition I		3	ENGL 101
CIS 103 – PC Applications		3	Tech Comp
SECOND SEMESTER			
ENGR 202 – Engineering Design and Laboratory II	ENGR 102	4	Writing Intensive
PHYS 140 – Mechanics, Heat and Sound	MATH 171	5	Natural Science
MATH 172 – Calculus II	MATH 171	4	
MATH 270 – Linear Algebra	MATH 171, MATH 172	4	
SUMMER SESSION I			
ENGL 102 – English Composition II	ENGL 101	3	ENGL 102
THIRD SEMESTER			
MATH 271 – Calculus III	MATH 172, MATH 270	4	
CHEM 122 – College Chemistry II	CHEM 121	4	
ENGR 221 – Statics ¹	PHYS 140, MATH 172	3	
PHYS 241 – Electricity, Magnetism and Light	PHYS 140, MATH 172	5	
FOURTH SEMESTER			
Humanities Elective		3	Humanities
Social Science Elective		3	Social Sciences
MATH 272 – Differential Equations	MATH 172, MATH 270	4	
ENGR 222 – Dynamics ¹	ENGR 221, MATH 271	3	
CSCI 111 – Program Alg. Dev. I or	MATH 161	4	
ENGR 205 – Materials Engineering	PHYS 241, MATH 172		
MINIMUM CREDITS NEEDED TO GRADUATE		71	

General Education Requirements

All General Education requirements are met through required courses (as indicated above) except for the Interpretive Studies requirement and the American/Global Diversity requirement. Therefore, in order to graduate, students in this program must choose one course that is designated Interpretive Studies and one course that is designated American/Global Diversity. The same course may be used to fulfill both of these requirements. A list of courses that fulfill these requirements and a more detailed explanation of the College's general education requirements appear elsewhere in this Catalog and on www.ccp.edu.

¹ A student planning to major in Chemical Engineering at a transfer institution may substitute CHEM 221 – 222 (or CHEM 211 – 212) for ENGR 221 and ENGR 222.

For More Information Contact:

The Division of Math, Science and Health Careers, Room W2-7, 1700 Spring Garden Street, Philadelphia, PA 19130, Telephone (215) 751-8430; or the College Information Center (215) 751 8010.