

Engineering Science



What is the Engineering Program?

Engineers use scientific and mathematical principles to solve the technical problems that confront society. Engineers gain their knowledge of science and mathematics through study, experience, and practice, and use this knowledge to design and develop new products, devices, structures and processes.

HCC's Engineering Program is a rigorous program geared for serious students. It is designed to provide the first two years of education for students planning to transfer into an engineering program at a four-year college or university. The program provides a strong foundation in the physical sciences, engineering science, and mathematics. In addition, the program prepares students for more specialized courses that are taken in the third and fourth years of an engineering program. Students who successfully complete the engineering science curriculum are awarded the degree of Associate of Science in Engineering Science.

What skills are needed to excel in this program?

Engineering students should have a proficiency in math and science and should be self-motivated. Successful engineering students are effective communicators and enjoy working within teams or small groups.

What types of jobs do engineers perform?

Engineering is a diverse profession and engineers are employed in every major industry. There are many employment paths that an engineer can follow.

Many engineers design and develop new products. During the design process, engineers work in teams to understand the product needs, develop alternatives, and select the most appropriate solution. The engineers will specify functional requirements, design and test the product components, integrate the product components to produce the final design, and evaluate the design's overall performance, cost, reliability, and safety.

In addition to product design and development, other employment paths available to engineers include research, production and testing, construction, operations, sales, management, consulting, teaching, and quality assurance.



Engineering students usually focus their studies on one discipline during the third and fourth years of their engineering education, and generally enter the work force with a bachelor's degree in that discipline.

Some of the most common engineering disciplines are:

- Aerospace
- Biomedical
- Chemical
- Civil
- Electrical/Computer
- Environmental
- Industrial
- Mechanical

What makes HCC's program special?

While completing the Engineering Program, students will have the opportunity to choose from three engineering tracks in chemical/environmental, electrical/computer, or mechanical/aerospace/civil. Students will have the opportunity to learn and work with the same state-of-the-art engineering modeling and computation software packages that are

PROGRAM OPTIONS

- 📖 A.S. degree, Engineering Science
 - Track A: Chemical and Environmental Engineering Pathway
 - Track B: Electrical and Computer Engineering Pathway
 - Track C: Mechanical/Aerospace and Civil Engineering Pathway

CAREER OUTLOOK

MEDIAN SALARY

\$110K

for engineering occupations

EMPLOYMENT



200,900 jobs in U.S.
4% growth over next ten years

Earnings vary depending on experience, education, geographical location, and engineering discipline. As a group, engineers earn some of the highest average starting salaries among those holding bachelor's degrees.

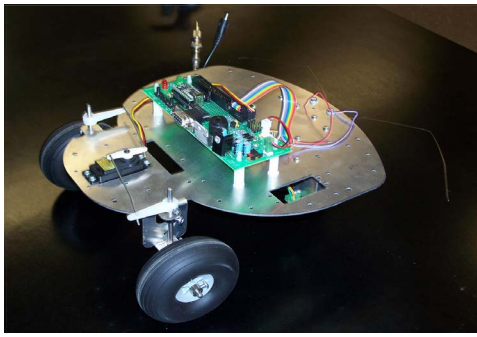
(source: www.bls.gov/ooh)

the standard in many industries, such as PTC CREO and MATLAB.

In addition, HCC engineering students have opportunities to distinguish themselves at prospective four-year colleges and universities by participating in undergraduate design and research projects such as the Balloon Payload Program in conjunction with Maryland Space Grant Consortium and the Department of Aerospace Engineering at the University of Maryland, College Park.

What are the program options?

Students can earn an associate of science degree in engineering science in one of three tracks or pathways: Track A: Chemical and Environmental; Track B: Electrical and Computer; Track C: Mechanical/Aerospace and Civil. With the completion of this degree, students will have completed the first two years of study toward a bachelor's degree in engineering and be prepared to transfer into an engineering program at a four-year college or university, such as the A. James Clark School of Engineering at University of Maryland, College Park, UMBC Mechanical Engineering Program at Shady Grove, or Engineering at Shippensburg University.



A.S. Degree

Engineering Science

The Engineering Science Program provides a sequence of liberal arts and engineering courses for students who plan to transfer into upper-division programs in physics, and any engineering science such as mechanical, electrical, or civil engineering. Students should identify an intended transfer institution as early as possible and complete appropriate courses.

NOTE: The following information reflects recent curriculum updates that are pending final MHEC approval.

General Education Requirements 32 credits

Arts/Humanities

Select any two courses from the approved Gen Ed List..... 6

Behavioral/Social Sciences

Select any two courses from the approved Gen Ed List..... 6

Biological/Physical Science

CHM 103 General Chemistry I 4
PHY 203 Principles of Physics I..... 4

Diversity

Select any one course from the approved Gen Ed List..... 3

English

ENG 101 English Composition..... 3
**ENG 101E and ENG 101P are approved substitutions for ENG 101. A minimum grade of "C" or better is required.*

Mathematics

MAT 203 Calculus I 4

Program Requirements..... 25-28 credits

EGR 103 Introduction to Engineering Science..... 3
MAT 204 Calculus II 4
MAT 205 Calculus III 4
MAT 206 Differential Equations 4
PHY 204 Principles of Physics II..... 4

Select a Program Track:

Track A: Chemical/Environmental Engineering

6 Credits

EGR 108 Statics..... 3
EGR 206 Thermodynamics..... 3

Track B: Electrical/Computer Engineering

8 Credits

EGR 208 Systems and Circuits..... 4
EGR 210 Digital Logic Design 4

Track C: Mechanical/Aerospace and Civil Engineering

9 Credits

EGR 108 Statics..... 3
EGR 203 Mechanics of Materials 3
EGR 204 Dynamics..... 3

Free Electives..... (6-9 Credits)

Electives should be chosen in consultation with a transfer advisor and/or transfer institution. Some recommended courses are:

Any BIO (biology) laboratory course 4
CHM 104 General Chemistry II 4
CHM 203 Organic Chemistry I 4
CHM 204 Organic Chemistry II 4
Any CSC (computer science) course 3
Any approved General Education course from the English Category..... 3

Any EGR course not taken as a program requirement..... 3-4
ENV 201 Fundamentals of Environmental Studies I 4
ENV 202 Fundamentals of Environmental Studies II 4
MAT 160 Precalculus I..... 3
MAT 161 Precalculus II..... 4
PHY 205 Principles of Physics III..... 4

Degree Requirement.....64 credits

**Student progress in this curriculum requires the ability to function at the pre-calculus level.*

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