

ENGINEERING FUNDAMENTALS

PROGRAMS

- **Certificate of Achievement**



**HARTNELL
COLLEGE**

DESCRIPTION

A student completing the Engineering Fundamentals Certificate of Achievement will gain a solid grounding in the basic principles that underlie all engineering disciplines. This certificate provides both academic preparation for and a pathway to internships. When combined with further study, it will lead to the Engineering Associate in Science Degree and/or transfer. This certificate is intended to be completed at the beginning of a student's course of study, while they are at the freshman level. As such, it prepares a student to enter most sophomore-level engineering and STEM support courses. This certificate is specifically designed to encourage and guide students to select their courses in a sequence which enables them to transfer as fast as possible. Recommendations based on majors are as follows:

- Civil or Mechanical engineering majors: Engineering 5 AND Chemistry 1A
- Computer or Software engineering majors: Computer Science 1 AND Computer Science 2A
- Electrical engineering majors: Computer Science 1 AND (Computer Science 2A OR Chemistry 1A)

Students should discuss which options make sense for them with their counselor.

LEADS TO CAREER OPPORTUNITIES SUCH AS:

- Aerospace Engineer
- Biomedical Engineer
- Chemical Engineer
- Civil Engineer
- Computer Engineer
- Electrical Engineer
- Industrial Engineer
- Mechanical Engineer

TRANSFER PREPARATION

Courses that fulfill major requirements for an associate degree may differ from those needed to prepare for transfer. Students who plan to transfer to a four-year college or university should schedule an appointment with a Hartnell College counselor to develop a student education plan before beginning their program.

TRANSFER RESOURCES

www.ASSIST.org – CSU and UC Articulation Agreements and Major Search Engine

CSU System Information - <http://www2.calstate.edu>

FINANCIAL AID

Paying for the cost of a college education requires a partnership among parents, students and the college. As the cost of higher education continues to rise we want you to know that Hartnell College offers a full array of financial aid programs, federal loan programs, and fee waivers.

<https://www.hartnell.edu/students/fa/net-price-calculator.html>

ENGINEERING FUNDAMENTALS (CT.EGN)

CERTIFICATE OF ACHIEVEMENT

Program Outcomes: Upon successful completion of this program a student will be able to:

- demonstrate the ability to write computer programs and apply them towards solving engineering problems.
- acquire, develop, and refine the prerequisite mathematics, physics, and chemistry foundational skills to be successful in sophomore level engineering courses such as Statics, Circuit Analysis, or Materials Science and Engineering.
- formulate and demonstrate a plan to appropriately select the courses they will need to transfer to a four-year university.

Recommended electives by major:

Civil/Mechanical Engineering	EGN-5, CHM-1A
Computer Engineering	CSS-1, CSS-2A
Electrical Engineering	CSS-1, CSS2A or CHM-1A

Required Major Courses (17-19 units)

- MAT-3A – Analytic Geometry and Calculus I 4.0
- MAT-3B – Analytic Geometry and Calculus II 4.0
- PHY-4A – General Physics I/Mechanics 4.0
- EGN-1R – Introduction to Engineering 2.0
- OR**
- EGN-1 – Introduction to Engineering 3.0
- ENG-1A – College Composition and Reading 3.0
- OR**
- ENG-1AX – College Composition and Reading 4.0

Major Electives (Complete 7-9 units)

- EGN-5 – Programming and Problem Solving in MATLAB 3.0
- CSS-1 – Intro to Computer Science & Programming Fundamentals 4.0
- CSS-2A – Object Oriented Programming 4.0
- CHM-1A – General Chemistry I 5.0

TOTAL: 24-28 UNITS

GAINFUL EMPLOYMENT INFORMATION:

See the certificate program cost and the employment outlook for graduates by clicking the link below:
<http://www.hartnell.edu/gainful-employment-certificate-programs-0>

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