Introduction

Please click here (http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-engineering-design-computing/mechanical-engineering/) to see the Mechanical Engineering department information.

The mechanical engineer is concerned with satisfying the needs of society using a combination of material, human, and economic resources. Mechanical engineering covers a wide spectrum of activities in the engineering profession. Generally, it uses design, analysis, and experimentation of mechanical systems to ensure safe, efficient, and productive operation. These activities include energy conversion and transmission and associated power processes; dynamic, strength, and wear considerations. In addition, economic aspects of the development, design, and use of materials, machines, and processes are investigated. Furthermore, the analysis, synthesis, and control of entire engineering systems are topics that mechanical engineers address.

Program Educational Objectives.

The program offered by the Department of Mechanical Engineering of the University of Colorado Denver can predominately be completed in the afternoon and evening hours to accommodate both working and traditional students. The department seeks to graduate a diverse population of students with bachelor’s degrees who within a few years of graduation able to:

1. Be employed by a diverse group of industries, research laboratories, and educational institutions.
2. Pursue careers in engineering, interdisciplinary areas, research, and education.
3. Pursue postgraduate education and advanced degrees.

The mechanical engineering curriculum begins with a strong emphasis on mathematics and physics. It continues with a concentration in engineering sciences, including solid and fluid mechanics; thermodynamics, heat, and mass transport; materials; and systems analysis and control. It also incorporates laboratory and design courses that demonstrate how scientific knowledge is applied in the design and development of valuable devices and manufacturing processes.

The mechanical engineering program has a two-course senior-year capstone design sequence where students design and build, either virtually or physically, a project requiring many of the techniques learned in the program. In the last two years, the curriculum emphasizes engineering science and design and provides technical electives in the following areas:

- thermodynamics
- heat transfer
- fluid mechanics
- solid mechanics
- biomechanics
- dynamics and controls
- computer-aided design and manufacturing
- composite materials
- outdoor recreational gear
- additive manufacturing
- material science
- computational solid and fluid mechanics
- design engineering and science

Program Delivery

- This is an on-campus program.

Declaring This Major

- Click here (http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-engineering-design-computing/#policiestext) to go to information about declaring a major.

General Requirements

To earn a degree, students must satisfy all requirements in each of the areas below, in addition to their individual major requirements.

- CU Denver General Graduation Requirements (http://catalog.ucdenver.edu/cu-denver/undergraduate/graduation-undergraduate-core-requirements/)
- CU Denver Core Curriculum (http://catalog.ucdenver.edu/cu-denver/undergraduate/graduation-undergraduate-core-requirements/)
- College of Engineering, Design and Computing Graduation Requirements (http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-engineering-design-computing/#graduationrequirementstext)
- Click here (http://catalog.ucdenver.edu/cu-denver/undergraduate/academic-policies-procedures/) for information about Academic Policies

Program Requirements

1. CVEN 3111 Analytical Mechanics II may be substituted for MECH 2033 Dynamics.
2. Not all courses may be offered every semester.
3. Students must maintain a minimum 2.0 GPA in all courses applying to major requirements.
4. Students must maintain a minimum 2.0 GPA in all MECH courses attempted.
5. Students must complete a minimum of 128 semester hours of coursework.
6. The last 30 hours must be earned as a degree-seeking student in the College of Engineering Design and Computing at CU Denver.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>MECH 1025</td>
<td>CAD and Graphics for Mechanical Engineering</td>
<td>3</td>
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<tr>
<td>MECH 1045</td>
<td>Manufacturing Processes Design</td>
<td>3</td>
</tr>
<tr>
<td>MECH 1100</td>
<td>Fundamentals of Computational Innovation</td>
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<tr>
<td>MECH 1200</td>
<td>Fundamentals of Engineering Design Innovation</td>
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<td>MECH 2023</td>
<td>Statics</td>
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<td>MECH 2033</td>
<td>Dynamics</td>
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<td>CVEN 3111</td>
<td>Analytical Mechanics II</td>
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<td>ELEC 3030</td>
<td>Electric Circuits and Systems</td>
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<td>MECH 2024</td>
<td>Introduction to Materials Science</td>
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<td>MECH 2034</td>
<td>Properties of Engineering Materials</td>
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<td>MECH 3010</td>
<td>Elementary Numerical Methods and Programming</td>
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<td>MECH 3012</td>
<td>Thermodynamics</td>
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<tr>
<td>MECH 3021</td>
<td>Introduction to Fluid Mechanics</td>
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<td>MECH 3027</td>
<td>Measurements</td>
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<td>MECH 3028</td>
<td>Laboratory of Mechanical Measurements</td>
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<td>MECH 3031</td>
<td>Fluids/Thermal Laboratory</td>
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<td>MECH 3032</td>
<td>Electric Circuits and Systems Lab</td>
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<tr>
<td>MECH 3035</td>
<td>Design of Mechanical Elements</td>
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<td>MECH 3042</td>
<td>Heat Transfer</td>
<td>3</td>
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<tr>
<td>MECH 3043</td>
<td>Strength of Materials</td>
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<td>MECH 4023</td>
<td>System Dynamics</td>
<td>3</td>
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<td>MECH 4035</td>
<td>Senior Design I</td>
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<td>MECH 4045</td>
<td>Senior Design II</td>
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<td>MECH 4142</td>
<td>Thermal Energy Systems</td>
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**Technical Electives**

Select 12 semester hours of the following: 9

- MECH 4208/5208 Special Topics
- MECH 3045 Principles of Additive Manufacturing
- MECH 3939/5939 Internship
- MECH 4020/5020 Biomechanics
- MECH 4025/5025 Advanced Biomechanics
- MECH 4110 Numerical Methods for Engineers
- MECH 4114 Designing with Composites
- MECH 4116 Robotics
- MECH 4120 Methods of Engineering Analysis
- MECH 4141 Fluid Mechanics
- MECH 4147 Engineering Economy
- MECH 4163 Rigid-Body Dynamics
- MECH 4175 Finite Element Analysis in Machine Design
- MECH 4178 Solar Engineering
- MECH 4228/5228 Special Topics (Special Topics) ²

**Mathematics**

- MATH 1401 Calculus I 4
- MATH 2411 Calculus II 4
- MATH 2421 Calculus III 4
- MATH 3195 Linear Algebra and Differential Equations 4

**Science**

- ENGR 1130 Chemistry for Engineers 5
- PHYS 2311 General Physics I: Calculus-Based 4
- PHYS 2321 Intro Experimental Phys Lab I 1
- PHYS 2331 General Physics II: Calculus-Based 4
- PHYS 2341 Intro Experimental Phys Lab II 1

**Total Hours** 101


To review the Degree Map for this program, please visit our website (https://www.ucdenver.edu/student/advising/undergraduate/degree-maps/cedc/).