

## PROGRAM OVERVIEW

The Mechanical engineering offers interesting and challenging career opportunities in research, design, development, manufacturing, testing and marketing for either private industry or government. As a mechanical engineer, you may work on products such as engines, transmissions, compressors, pumps, computer disk drives, CAD/CAE software, oil field drilling rigs, missiles, space satellites, earth moving equipment, container manufacturing machines and medical equipment.

The Bachelor of Science (BS) in mechanical engineering curriculum begins with a strong emphasis on mathematics, physics and chemistry. 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 concludes with laboratory and design courses which demonstrate the ways in which scientific knowledge is applied in the design and development of useful devices and manufacturing processes.

## ACADEMIC ADVISING

Advising in the College of Engineering, Design and Computing (CEDC) depends on your student standing—undergraduate students either are pre-engineering or are admitted to the program, depending on degree progress. *Pre-engineering* students must meet with a staff advisor each semester before they can register for classes.

*Students admitted to the Mechanical Engineering program are required to meet with an advisor in their specific department and should contact that department to schedule an appointment.*

*Students admitted to the College of Engineering, Design and Computing as a pre-engineering student are required to meet with a staff advisor.*

**Mechanical Engineering**  
[mechanicalengineering@ucdenver.edu](mailto:mechanicalengineering@ucdenver.edu)  
Visit the department website [here](#)  
North Classroom 2024  
303-315-7500

**College of Engineering, Design and Computing**  
[engineering@ucdenver.edu](mailto:engineering@ucdenver.edu)  
North Classroom 3034  
303-315-7170

## GENERAL GRADUATION REQUIREMENTS & POLICIES

All CU Denver CEDC MECH students are required to complete the following minimum general graduation requirements:

1. Complete a minimum of 128 semester hours
2. Achieve a minimum 2.0 CU cumulative grade point average (GPA) and 2.0 minimum GPA in engineering coursework
3. Complete all college and major requirements
4. Residency: complete a minimum of 30 CEAS hours as a declared CEAS student in good standing at CU Denver
5. Terminal Residency: complete at least the final two semesters as an enrolled CEAS student

## PROGRAM REQUIREMENTS & POLICIES

**Students are responsible for meeting with the faculty advisor in their department to confirm major requirements.** Students completing the Mechanical Engineering B.S. Degree are required to complete the following minimum program requirements:

1. Complete 24 semester hours of **CU Denver Core Curriculum coursework**.
2. Complete a minimum of 31 semester hours of **required mathematics and basic science courses with a grade of C- (2.0) or better in each course**.
3. Complete a minimum of 73 semester hours of **MECH core curriculum coursework, including 12 semester hours of elective coursework in an approved mechanical engineering track. All prerequisite courses must be completed with a grade of C- or better.**

Courses	Credits	Notes
<b>* Course prerequisites change regularly. Students are responsible for consulting advisors and the class schedule in the student portal for prerequisite information. *</b>		
<b>Required CU Denver Core Curriculum Coursework</b>	<b>24</b>	<a href="#">CU Denver Core Curriculum</a>
<b>Required Mathematics and Basic Sciences Courses</b>	<b>31</b>	
MATH1401 Calculus I	4	*Prerequisite: Placement; fulfills CORE Mathematics
MATH2411 Calculus II	4	*Prerequisite: C- or better in MATH1401
MATH2421 Calculus III	4	*Prerequisite: C- or better in MATH2411
MATH3195 Linear Algebra and Differential Equations	4	*Prerequisite: C- or better in MATH2411
ENGR 1130 Engineering Chemistry	5	*Prerequisite: High School chemistry or CHEM 1000 recommended
PHYS 2311 & 2321 General Physics I with lab	5	*Prerequisite: MATH1401
PHYS 2331 & 2341 General Physics II with lab	5	*Prerequisite: PHYS 2311 and MATH 2411
<b>Required Mechanical Engineering Courses</b>	<b>61</b>	
MECH 1025 Mechanical Engineering Graphics and CAD	3	*Prerequisite: High School Geometry and Algebra
MECH 1045 Manufacturing Processes Design	3	*Prerequisite: MECH 1025
MECH 2023 Statics	3	*Prerequisites: PHYS 2311 *Co-Requisite: MATH 2411
MECH 2024 Introduction to Materials Science	3	*Prerequisite: ENGR 1130
MECH 2033 Dynamics	3	*Prerequisite: MECH 2023



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<b>* Course prerequisites change regularly. Students are responsible for consulting advisors and the class schedule in the student portal for prerequisite information. *</b>		
<b>Required Mechanical Engineering Courses (Continued)</b>		
MECH 2034 Properties of Engineering Materials Lab	1	*Co-Requisite: MECH 2024
MECH 3010 Elementary Numerical Methods	3	*Co-Requisite: MATH 3195 or (MATH 3191 and MATH 3200)
MECH 3012 Thermodynamics I	3	*Prerequisites: MATH 1401 and PHYS 2311
MECH 3021 Introduction to Fluid Mechanics	3	*Prerequisite: MECH 3012, MATH 2421 and MECH 2033
MECH 3022 Thermodynamics II	3	* Prerequisite: MECH 3012 and MATH 2421
MECH 3023 System Dynamics I: Vibrations	3	* Pre-requisites: MECH 2033, MECH 3010, *Co-Requisite: MECH 3043
MECH 3027 Measurements	3	* Prerequisite: ELEC 3030 and MATH 3195 or (MATH 3191 and MATH 3200)
MECH 3028 Measurements Lab	1	* Co-Requisite: MECH 3027
ELEC 3030 Electric Circuits and Systems	3	* Prerequisite: PHYS 2331 and MATH 2421
MECH 3031 Fluids/Thermal Lab	1	*Co-Requisite: MECH 3021
MECH 3032 Electric Circuits and Systems Lab	1	*Co-Requisite: ELEC 3030
MECH 3035 Design of Mechanical Elements	3	*Prerequisite: MECH 3043 and MECH 2024
MECH 3042 Heat Transfer	3	*Prerequisite:MECH3021
MECH 3043 Strengths of Materials	3	*Prerequisite: MECH 2023
MECH 4023 System Dynamics II: Controls	3	*Prerequisite: MECH 3023
MECH 4035 Senior Design I	3	*Prerequisite: MECH 3035 and 40 hours of MECH courses
MECH 4045 Senior Design II	3	*Prerequisite: MECH 4035
MECH 4142 Thermal Systems Design	3	*Prerequisite: MECH 3042 and MECH 3010
<b>MECH Technical Electives</b> Choose four <b>approved</b> by your advisor mechanical engineering track electives; a minimum of six semester hours must be upper-division (3000- or 4000-level) and taught within the Department of Mechanical Engineering.	<b>12</b>	Check individual courses for prerequisites
<b>Total Program Hours:</b>	<b>128</b>	

**SAMPLE ACADEMIC PLAN OF STUDY**

The following academic plan is a *sample* pathway to completing degree requirements for this major. Students should tailor this plan based on previously completed college coursework (e.g., AP, dual/concurrent enrollment, and transfer credit), course availability, and individual preferences related to course load, schedules, or add-on programs such as minors or double-majors. **Students deviating from this plan must fulfill course prerequisites and must meet with the faculty advisor in their department to confirm degree requirements.**

<b>Year One</b>	<b>Semester 1</b>	CRS	<b>Semester 2</b>	CRS	
	MECH 1025: Engineering Graphics and CAD	3		MATH 2411: Calculus II	4
	ENGR 1130:Engineering General Chemistry	5		PHYS 2311/PHYS 2321: General Physics I with Lab	5
	MATH 1401: Calculus I	4		MECH 1045: Manufacturing	3
	ENGL 1020: Core Composition I	3		ENGL 2030: Core Composition II	3
	UCD Core Curriculum Course	3		UCD Core Curriculum Course	3
<b>Year Two</b>	<b>Semester 3</b>	CRS	<b>Semester 4</b>	CRS	
	MECH 2023: Statics	3		MECH 2033: Dynamics	4
	MECH 2024: Materials Science	3		MECH 2034: Properties of Materials Lab	1
	MATH 2421: Calculus III	3		MECH 3012: Thermodynamics I	3
	PHYS 2331: General Physics II	4		ELEC 3030/MECH 3032: Electric Circuits & Systems w/Lab	4
	PHYS 2341: General Physics II Lab	1		MATH 3195: Linear Algebra and Differential Equations	4
UCD Core Curriculum Course	3	UCD Core Curriculum Course	3		
<b>Year Three</b>	<b>Semester 5</b>	CRS	<b>Semester 6</b>	CRS	
	MECH 3010: Elem. Numerical Methods & Programming	3		MECH 3022: Thermodynamics II	3
	MECH 3021 Introduction to Fluid Mechanics	3		MECH 3023: System Dynamics I	3
	MECH 3027/MECH 3028: Measurements w/Lab	4		MECH 3035: Design Of Mechanical Elements	3
	MECH 3031: Fluids Thermal Lab	1		MECH 3042: Heat Transfer	3
	MECH 3043: Strength of Materials	3		MECH Technical Elective	3
UCD Core Curriculum Course	3				
<b>Year Four</b>	<b>Semester 7</b>	CRS	<b>Semester 8</b>	CRS	
	MECH 4023: System Dynamics II	3		MECH 4045: Senior Design II	3
	MECH 4035: Senior Design I	3		MECH Technical Elective	3
	MECH 4042: Thermal Systems Design	3		MECH Technical Elective	3
MECH Technical Elective	3	UCD Core Curriculum Course	3		