

Mechanical Engineering Graduate Programs

“My research is in the area of biomechanics. I am looking at lumbar spinal fusion which is a common result for people with extreme cases of disc degenerative disease. My research involves looking at the effects of various parameters on bone mineral density in the lumbar spine.”

-Lillian Chatham,
MS '14, BS '12

The CU Denver Department of Mechanical Engineering offers a Master of Science, Master of Engineering, and the interdisciplinary Engineering and Applied Science PhD.

Master of Science

Our Master of Science (MS) program builds on the fundamentals of mechanical engineering typically learned in an undergraduate degree program. As a graduate student, you may pursue research in manufacturing processes, fluid mechanics, solid mechanics, energy thermodynamics, mechanical design and composite materials.

STUDY PLANS

Students complete a minimum of 30 semester hours, including required and elective courses,

and either a master's thesis, master's project, or final examination.

Plan I:

24 credit hours coursework
6 credit hours master's thesis

Plan II:

27 credit hours coursework
3 credit hours master's project

Plan III:

30 credit hours coursework
Course-based project (see graduate advisor for details.)

STUDY TRACKS

MS Students may choose from four study tracks.

- Thermal Science
- Mechanics
- General Mechanical Engineering
- Biomechanics

Thermal Science Option

The thermal science option requires 12 hours of coursework in numerical methods, analytical methods, thermodynamics, and fluid mechanics.

Mechanics Option

The mechanics option requires 12 hours of coursework in numerical methods, analytical methods, elasticity, and dynamics.

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General Mechanical Engineering Option

The general mechanical engineering option requires 18 hours of coursework in numerical methods, analytical methods, thermodynamics, fluid mechanics, elasticity, and dynamics.

Biomechanics Option

The biomechanics option requires a minimum of 31 credit hours of coursework including 16 hours in introduction to research, analytical methods, biomechanics, advanced biomechanics, and two more required courses.

ELECTIVES

Beyond the required courses and plan requirements (thesis, project, or final comprehensive examination), the remaining minimum program credit hours are fulfilled as electives.

Students in the MS program must meet with a graduate advisor before or during the first semester to design a sequence of elective courses that form a coherent program plan. Each study track offers elective courses that allow a student to broaden their background in the thermal sciences, mechanics, or biomechanics and should be approved by the graduate advisor.

Master of Engineering

As an interdisciplinary program, the Master of Engineering

(MEng) degree allows students to combine advanced engineering coursework with graduate-level non-engineering courses such as business administration, social sciences, biological sciences and public administration. Requirements for admission are the same as for the master of science.

STUDY PLAN

Students complete a minimum of 30 semester hours of coursework. At least 15 of these credit hours must be in mechanical engineering at the 5000 level or higher. A maximum of 12 credit hours may be taken outside engineering. The MEng program requires a 3 credit hour project with final written report.

STUDY TRACKS

The MEng program offers one specialized study track in Sports Engineering.

Required courses include analytical methods, elasticity, dynamics, and introduction to sports engineering.

Students in the MEng program must meet with an advisor before or during the first semester to design a sequence of elective courses that form a coherent program plan.

The Sports Engineering study track requires specific elective courses in their program requirements. All courses taken outside the mechanical

engineering area must be pre-approved by an advisor. A graduate advisor will provide more information on the degree options.

PhD Program

The doctoral program in mechanical engineering is available through the Department of Mechanical Engineering at the CU Boulder Campus. Faculty at CU Denver may serve as research advisors by arrangement.

Engineering and Applied Science PhD

The Department of Mechanical Engineering is a host department for the multidisciplinary doctor of philosophy degree program in engineering and applied science. The degree consists of a primary and secondary concentration.

The required secondary concentration can be chosen from any remaining department within the college, including the Department of Bioengineering. The secondary concentration may also be chosen from another CU Denver school or college.

To learn more about the department, programs, faculty and research, visit ucdenver.edu/mechanical.

Required Courses

MS Thermal Sciences

MECH 5110 Numerical Methods for Engineers
MECH 5120 Methods of Engineering Analysis
MECH 5141 Viscous Flow
MECH 5180 Advanced Heat Transfer

MS Mechanics

MECH 5110 Numerical Methods for Engineers
MECH 5120 Methods of Engineering Analysis
MECH 5143 Theory of Elasticity
MECH 5163 Dynamics

MS General Mechanical Engineering

MECH 5110 Numerical Methods for Engineers
MECH 5120 Methods of Engineering Analysis
MECH 5141 Viscous Flow
MECH 5143 Theory of Elasticity
MECH 5163 Dynamics
MECH 5180 Advanced Heat Transfer

MS Biomechanics

MECH 5001 Introduction to Research
MECH 5120 Methods of Engineering Analysis
MECH 5208 Biomechanics
MECH 5208 Advanced Biomechanics (Choose One)
MECH 5110 Numerical Methods for Engineers OR MECH 5175 Finite Element Analysis (Choose One)
MECH 5143 Theory of Elasticity OR MECH 5163 Dynamics

MEng

MECH 5120 Methods of Engineering Analysis
MECH 5143 Theory of Elasticity
MECH 5163 Dynamics
MECH 5960 Master's Report

MEng Sports Engineering

MECH 5120 Methods of Engineering Analysis
MECH 5143 Theory of Elasticity
MECH 5163 Dynamics
MECH 5238 Intro to Sports Engineering
MECH 5960 Master's Report

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