

MECHANICAL DESIGN AND PRODUCT DEVELOPMENT - GRADUATE CERTIFICATE

This certificate provides training in mechanical design and product development. Students will build on methods from across the field of design to create learning experiences that will directly influence their potential career path in product design and development. Students will be challenged throughout the certificate coursework with complex, ambiguous design problems with solutions that are uncertain, and they will be challenged to solve those issues creatively and communicate those solutions to others effectively.

Students who complete this certificate will have the necessary knowledge and skills for a broad range of industrial sectors that involve product design and development.

Requirements

Admission Requirements

Applicants who are not degree-seeking students at the university may apply for a graduate certificate through Continuing Education by submitting a Nondegree Graduate Certificate Application (https://ce.apply.colorado.edu/register/nondegree_grad_cert_app/). Eligible candidates must hold an undergraduate degree in engineering, sciences or mathematics from an institution accredited by an agency recognized by the U.S. Department of Education. Our preferred minimum GPA is 3.0.

Internal applicants who are enrolled bachelor's–accelerated master's (BAM) who are at graduate standing or graduate students at CU Boulder in engineering, sciences or mathematics and have a 3.0 cumulative GPA or higher are eligible to apply. We accept applications on a rolling basis.

For more information on applying, visit the department's graduate certificates (<https://www.colorado.edu/mechanical/academics/graduate-certificates/>) webpage or contact megrad@colorado.edu.

Additional Information

To earn this certificate, students must complete 12 graduate level credits. These credits can be chosen by the student, in consultation with certificate program faculty and the graduate advisors, based on the available courses and description of curriculum below.

Courses offered each semester will depend on the availability of faculty. At least one relevant course will be offered each fall and spring semester to ensure that students are able to make progress toward completion of the certificate. In accordance with university policy, degree-seeking students will only be eligible for award of the certificate upon completion of their M.S. degree.

All degree-seeking and nondegree certificate students must meet the following minimum academic standards for successful completion of the certificate:

- A minimum grade of a B or higher in each course applied towards certificate requirements; and
- A cumulative GPA of 3.0 or higher in certificate courses.

Required Courses and Credits

Code	Title	Credit Hours
Required Courses		
MCEN 5055	Advanced Product Design	3
MCEN 5045	Design for Manufacturability	3
Electives		
<i>Elective Option 1</i> ¹		
Choose any two:		
MCEN 5279	Aesthetics in Design	
MCEN 5155	Automated Mechanical Design Synthesis	
MCEN 5215	Design for Inclusion	
MCEN 5228	Special Topics in Mechanical Engineering (Design Research Theory and Methods)	
EMEN 5400	Technical Product Development	
COEN 5550		
<i>Elective Option 2</i> ²		
MCEN 5065	Graduate Design I	
MCEN 5075	Graduate Design II	

¹ Degree-seeking and nondegree students.

² Nondegree students are ineligible to complete Elective Option 2; degree-seeking students must apply separately to complete Elective Option 2.

Learning Outcomes

Educational and scholarly goals of the certificate:

- To introduce students to potential career opportunities in the mechanical design and product development industry.
- To introduce students to industry tools and expectations for product development.
- To teach students the key concepts and engineering principles of mechanical design and product development.
- To understand the role of engineering design at the intersection of science, engineering, and culture.