

# FOOD ENGINEERING - GRADUATE CERTIFICATE

This certificate introduces students to the local food industry in Colorado and potential career opportunities in the food industry. Students will learn key scientific concepts and engineering principles of food products. The certificate focuses on the science and engineering of foods like specialty coffee and chocolate. Students will receive both a broad overview and in-depth content on food engineering and food product design, in addition to learning about food sustainability.

## Requirements

To earn this certificate, students must complete 9 graduate level credits, or three 3-credit graduate courses. These credits may be chosen by the student, in consultation with certificate program faculty and the graduate advisors, based on the available courses and description of curriculum in subsection c) below. Courses offered each semester will depend on the availability of faculty. However, beginning with the Spring 2023 semester, 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.

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

- Students must receive 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

Code	Title	Credit Hours
Students must take two of the following three courses:		
MCEN 5228	Special Topics in Mechanical Engineering (Design of Coffee)	3
MCEN 5228	Special Topics in Mechanical Engineering (Design of Chocolate)	3
MCEN 5228	Special Topics in Mechanical Engineering (Design of Beer)	3
Strongly recommended electives:		
MCEN 5228	Special Topics in Mechanical Engineering (Farm to Table: Sustainability in Contemporary Food Systems)	3
MDST 6351	Media, Culture & Food Politics	3
MCEN 5021	Introduction to Fluid Dynamics (Recommended only for students with engineering/math/physics undergraduate degree)	3
MCEN 5042	Heat Transfer (recommended only for students with engineering/math/physics undergraduate degree)	3
Elective Courses		
MCEN 5228	Special Topics in Mechanical Engineering (Household Energy Systems in the Global South)	3

MCEN 5022	Classical Thermodynamics (Recommended only for students with engineering/math/physics undergraduate degree)	3
MCEN/BMEN 5117	Anatomy and Physiology for Engineers	3
MSEN 5919	Special Topics in MSE: Mass Transport (Membranes)	1-5
ENVM 6100	Special Topics for Master of the Environment Program (Introduction to Food Systems)	3
ENVS 6305	Reducing the Environmental Impact of Food Systems: Evidence-Based Solutions	3
ENVM 6100	Special Topics for Master of the Environment Program (Quantitative Analysis in Food Systems)	3

## Learning Outcomes

Students will:

- Be introduced to potential career opportunities in the food industry.
- Be introduced to the local food industry in Colorado.
- Learn the key scientific concepts and engineering principles of food products.
- Focus on the science and engineering of specialty coffee, food engineering and food product design.
- Understand the role of food at the intersection of science, engineering and culture.