

# PH.D. IN MECHANICAL ENGINEERING

The Ph.D. in Mechanical Engineering is ideal for students looking to pursue advanced-level careers in industry, research, or academia. Students pursuing a Ph.D. in Mechanical Engineering undertake advanced research under the mentorship of a faculty advisor (Principal Investigator), most often on a government or industry funded project as a paid research assistant. The degree plan involves consideration of a challenging problem utilizing analytical, experimental, and/or design techniques. This research – in addition to coursework, exams, journal articles, and dissertation credits – culminates in a final dissertation. The dissertation contains new analytical knowledge, experimental knowledge, design knowledge, or a combination thereof. The dissertation must make an original contribution to the field.

## Requirements Effective Fall 2023

Code	Title	Credits
Select one course from the following:		3
CBE 521	Mathematical Modeling for Chemical Engineers	
ENGR 550/ MATH 550	Numerical Methods in Science and Engineering	
MATH 530	Mathematics for Scientists and Engineers	
MECH 568	Computational Methods for Mechanical Eng.	
Select 2 courses from the following:		6
CIVE 560	Advanced Mechanics of Materials	
MECH 529	Advanced Mechanical Systems	
MECH 532/ BIOM 532	Materials Issues in Mechanical Design	
MECH 538	Mechanical Engineering Thermodynamics	
MECH 539	Advanced Fluid Mechanics	
MECH 544	Advanced Heat Transfer	
<b>Electives</b>		
Electives <sup>1</sup>		3-32
<b>Master Degree Credit</b>		
Master Degree Credit <sup>2</sup>		30
<b>Dissertation</b>		
MECH 799A	Dissertation: Bioengineering	
MECH 799B	Dissertation: Energy Conversion	
MECH 799C	Dissertation: Environmental Engineering	
MECH 799D	Dissertation: Heat and Mass Transfer	
MECH 799E	Dissertation: Industrial and Systems Engineering	
MECH 799F	Dissertation: Mechanics and Design	
MECH 799G	Dissertation: Computer-Assisted Engineering	
MECH 799H	Dissertation: Robotics	
MECH 799I	Dissertation: Solar Engineering	
MECH 799J	Dissertation: Computational Fluids	
MECH 799K	Dissertation: Materials	

MECH 799L	Dissertation: Plasma
MECH 799M	Dissertation: Motorsport Engineering

**Program Total Credits:** 72

A minimum of 72 credits are required to complete this program. Of the 72 minimum credits required for this program, at least 21 credits must be at the 500-level or above and earned at CSU. Minimum of 15 credits with the MECH subject code. Minimum 12 credits in regular courses numbered 500 and above (not including dissertation, independent study, or supervised teaching).

- <sup>1</sup> Select courses with approval of advisor and graduate committee.
- <sup>2</sup> A maximum of 30 credits may be accepted from an engineering master's degree.