# MAJOR IN MECHANICAL ENGINEERING, ADVANCED MANUFACTURING CONCENTRATION

## Requirements
## Effective Fall 2025

**Freshman**

| | | AUCC | Credits |
|---|---|---|---|
| CO 150 | College Composition (GT-CO2) | 1A | 3 |
| ENGR 111 | Fundamentals of Engineering | | 3 |
| ENGR 114 | Engineering for Grand Challenges | | 3 |
| MATH 160 | Calculus for Physical Scientists I (GT-MA1) | 1B | 4 |
| MATH 161 | Calculus for Physical Scientists II (GT-MA1) | 1B | 4 |
| PH 141 | Physics for Scientists and Engineers I (GT-SC1) | 3A | 5 |
| Select one group from the following: | | | 5 |
| Group A: | | | |
| CHEM 111 | General Chemistry I (GT-SC2) | 3A | |
| CHEM 112 | General Chemistry Lab I (GT-SC1) | 3A | |
| Group B: | | | |
| CHEM 120 | Foundations of Modern Chemistry (GT-SC2) | 3A | |
| CHEM 121 | Foundations of Modern Chemistry Laboratory (GT-SC1) | 3A | |
| Historical Perspectives (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives) | | 3D | 3 |
| | **Total Credits** | | **30** |

**Sophomore**

| | | | |
|---|---|---|---|
| CIVE 260 | Engineering Mechanics-Statics | | 3 |
| CIVE 261 | Engineering Mechanics-Dynamics | | 3 |
| MATH 261 | Calculus for Physical Scientists III | | 4 |
| MATH 340 | Intro to Ordinary Differential Equations | | 4 |
| MECH 200A | Introduction to Manufacturing Processes: Lecture | | 3 |
| MECH 200B | Introduction to Manufacturing Processes : Laboratory | | 1 |
| MECH 207 | Mechatronics I | | 3 |
| MECH 210 | Engineering Design--3D Modeling and Printing | | 2 |
| MECH 231 | Engineering Experimentation | | 2 |
| PH 142 | Physics for Scientists and Engineers II (GT-SC1) | 3A | 5 |
| Social and Behavioral Sciences (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences) | | 3C | 3 |
| | **Total Credits** | | **33** |

**Junior**

| | | | |
|---|---|---|---|
| CIVE 360 | Mechanics of Solids | | 3 |
| MECH 305 | Mechanical Engineering Computational Methods | | 3 |
| MECH 307 | Mechatronics II | | 3 |
| MECH 324 | Dynamics of Machines | | 4 |
| MECH 325 | Machine Design with Finite Element Analysis | | 4 |

| | | | |
|---|---|---|---|
| MECH 331A | Introduction to Engineering Materials: Lecture | | 3 |
| MECH 331B | Introduction to Engineering Materials : Lab | | 1 |
| MECH 339 | Thermodynamics I for Mechanical Engineers | | 3 |
| MECH 342 | Fluid Mechanics for Mechanical Engineers | | 3 |
| MECH 344 | Heat and Mass Transfer | 4B | 3 |
| Advanced Writing (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing) | | 2 | 3 |
| | **Total Credits** | | **33** |

**Senior**

| | | | |
|---|---|---|---|
| MECH 338 | Thermal/Fluid Sciences Laboratory | | 1 |
| MECH 439 | Thermodynamics II for Mechanical Engineers | | 3 |
| Select one course from the following: | | | 3 |
| MECH 411 | Manufacturing Engineering | | |
| MECH 502 | Advanced/Additive Manufacturing Engineering | | |
| Select one group from the following: | | | 6 |
| Group A: | | | |
| MECH 486A | Engineering Design Practicum: I | 4A,4C | |
| MECH 486B | Engineering Design Practicum: II | 4C | |
| Group B: | | | |
| MECH 498A | Engineering Research Practicum: I | 4A,4C | |
| MECH 498B | Engineering Research Practicum: II | 4C | |
| Advanced Manufacturing Electives – select a minimum of 9 credits from the following: | | | 9 |
| ENGR 510 | Engineering Optimization: Method/Application | | |
| MECH 407 | Laser Applications in Mechanical Engineering | | |
| MECH 411[1] | Manufacturing Engineering | | |
| MECH 417 | Control Systems | | |
| MECH 428 | Probabilistic Design | | |
| MECH 432 | Engineering of Nanomaterials | | |
| MECH 434 | Materials Selection for Mechanical Design | | |
| MECH 464 | Injection Molding | | |
| MECH 502[1] | Advanced/Additive Manufacturing Engineering | | |
| MECH 513 | Simulation Modeling and Experimentation | | |
| MECH 529 | Advanced Mechanical Systems | | |
| MECH 530 | Advanced Composite Materials | | |
| MECH 531/BIOM 531 | Materials Engineering | | |
| MECH 533 | Composites Product Development | | |
| MECH 537 | Processing of Polymer Composites | | |
| MECH 564 | Fundamentals of Robot Mechanics and Controls | | |
| MSE 502A | Materials Science and Engineering Methods: Materials Structure and Scattering | | |
| MSE 502C | Materials Science and Engineering Methods: Materials Microscopy | | |
| MSE 502E | Materials Science and Engineering Methods: Bulk Properties and Performance | | |
| MSE 502F | Materials Science and Engineering Methods: Experimental Methods for Materials Research | | |
| 1C (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#aucc) | | 1C | 3 |
| Arts and Humanities (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities) | | 3B | 6 |
| | **Total Credits** | | **31** |
| | **Program Total Credits:** | | **127** |

[1] This course may only count toward the electives if the course was not selected as a required course.