

# MAJOR IN MECHANICAL ENGINEERING, AEROSPACE ENGINEERING CONCENTRATION

## Requirements Effective Fall 2023

### Freshman

|   |   | AUCC | Credits |
|---|---|------|---------|
| CHEM 111  | General Chemistry I (GT-SC2)                    | 3A   | 4       |
| CHEM 112  | General Chemistry Lab I (GT-SC1)                | 3A   | 1       |
| CO 150  | College Composition (GT-CO2)                    | 1A   | 3       |
| MATH 160  | Calculus for Physical Scientists I (GT-MA1)     | 1B   | 4       |
| MATH 161  | Calculus for Physical Scientists II (GT-MA1)    | 1B   | 4       |
| MECH 103  | Introduction to Mechanical Engineering          |      | 3       |
| MECH 105  | Mechanical Engineering Problem Solving          |      | 3       |
| PH 141  | Physics for Scientists and Engineers I (GT-SC1) | 3A   | 5       |
| 1C ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#aucc">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#aucc</a> )  |   | 1C   | 3       |
| Arts and Humanities ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities</a> ) |   | 3B   | 3       |

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**Total Credits** **33**

### Sophomore

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|--------------------------------------|--|----|---|
| CIVE 260                             | Engineering Mechanics-Statics                        |    | 3 |
| CIVE 261                             | Engineering Mechanics-Dynamics                       |    | 3 |
| ECE 204                              | Introduction to Electrical Engineering               |    | 3 |
| MATH 261                             | Calculus for Physical Scientists III                 |    | 4 |
| MATH 340                             | Intro to Ordinary Differential Equations             |    | 4 |
| Select one group from the following: |  |    | 3 |
| Group A:                             |  |    |   |
| MECH 200                             | Introduction to Manufacturing Processes              |    |   |
| Group B:                             |  |    |   |
| MECH 200A                            | Introduction to Manufacturing Processes: Lecture     |    |   |
| MECH 200B                            | Introduction to Manufacturing Processes : Laboratory |    |   |
| MECH 201                             | Engineering Design I                                 |    | 2 |
| MECH 202                             | Engineering Design II                                |    | 3 |
| MECH 231                             | Engineering Experimentation                          |    | 3 |
| PH 142                               | Physics for Scientists and Engineers II (GT-SC1)     | 3A | 5 |

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**Total Credits** **33**

### Junior

|           |  |  |   |
|-----------|--|--|---|
| CIVE 360  | Mechanics of Solids                                  |  | 3 |
| MECH 301A | Engineering Design III: Finite Element Analysis      |  | 1 |
| MECH 301B | Engineering Design III: Computational Fluid Dynamics |  | 1 |
| MECH 307  | Mechatronics and Measurement Systems                 |  | 4 |
| MECH 324  | Dynamics of Machines                                 |  | 4 |
| MECH 325  | Machine Design                                       |  | 3 |

2 Major in Mechanical Engineering, Aerospace Engineering Concentration

|  |  |       |            |
|--|--|-------|------------|
| Select one group from the following:   |  |       | 4          |
| Group A  |  |       |            |
| MECH 331   | Introduction to Engineering Materials          |       |            |
| Group B  |  |       |            |
| MECH 331A  | Introduction to Engineering Materials: Lecture |       |            |
| MECH 331B  | Introduction to Engineering Materials : Lab    |       |            |
| MECH 337   | Thermodynamics                                 |       | 4          |
| MECH 338   | Thermal/Fluid Sciences Laboratory              |       | 1          |
| MECH 342   | Fluid Mechanics for Mechanical Engineers       |       | 3          |
| MECH 344   | Heat and Mass Transfer                         | 4B    | 3          |
| Advanced Writing ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing</a> )                                   |  | 2     | 3          |
| <b>Total Credits</b>   |  |       | <b>34</b>  |
| <b>Senior</b>  |  |       |            |
| Select one group from the following:   |  |       | 8          |
| 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    |            |
| Aerospace Engineering Electives – select a minimum of 12 credits from the following:   |  |       | 12         |
| MECH 417   | Control Systems                                |       |            |
| MECH 420   | Aerospace Structures                           |       |            |
| MECH 425   | Mechanical Engineering Vibrations              |       |            |
| MECH 426   | Advanced Machine Design                        |       |            |
| MECH 450   | Aerospace Propulsion                           |       |            |
| MECH 460   | Aeronautics                                    |       |            |
| MECH 468   | Space Propulsion and Power Engineering         |       |            |
| MECH 478   | Computational Fluid Dynamics                   |       |            |
| MECH 507   | Laser Diagnostics for Thermosciences           |       |            |
| MECH 515   | Advanced Topics in Mechanical Vibrations       |       |            |
| MECH 517   | Chemical Rocket Propulsion                     |       |            |
| MECH 518   | Orbital Mechanics                              |       |            |
| MECH 519   | Aerospace Vehicles Trajectory and Performance  |       |            |
| MECH 520   | Finite Element Analysis in Mechanical Engr     |       |            |
| MECH 535   | Mechanics of Composite Materials               |       |            |
| MECH 539   | Advanced Fluid Mechanics                       |       |            |
| MECH 551   | Physical Gas Dynamics I                        |       |            |
| MECH 557   | Turbomachinery                                 |       |            |
| MECH 558   | Combustion                                     |       |            |
| MECH 567   | Broad-Beam Ion Sources                         |       |            |
| SYSE 501   | Foundations of Systems Engineering             |       |            |
| Arts and Humanities ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities</a> )                                  |  | 3B    | 3          |
| Historical Perspectives ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives</a> )              |  | 3D    | 3          |
| Social and Behavioral Sciences ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences</a> ) |  | 3C    | 3          |
| <b>Total Credits</b>   |  |       | <b>29</b>  |
| <b>Program Total Credits:</b>  |  |       | <b>129</b> |