MECHANICAL ENGINEERING AREA OF
CONCENTRATION, ENGINEERING SCIENCE AS

Total Credits: 63
Catalog Edition: 2024-2025

Program Description
This curriculum is designed to provide the first two years of a
four-year program leading to the award of a BS in engineering.
A student planning to transfer to any baccalaureate degree
granting institution should follow the appropriate area of
concentration listed below in consultation with an engineering
advisor. The student should also visit the Montgomery College
Engineering Advising website www.montgomerycollege.edu/
engineeringadvising for up-to-date comprehensive information
on transfer requirements for all universities and colleges with
which we have an articulated transfer program.

Completion of all requirements for any area of concentration
in engineering science will lead to the award of the AS in
engineering science.

This area of concentration will prepare students to transfer to
a four-year university with a major in mechanical engineering.
Specific requirements in colleges vary, and the student preparing
for a particular institution may, with approval, change the
sequence listed below; this sequence of courses is articulated
with the mechanical engineering program at the University of
Maryland, College Park. A suggested course sequence for full-
time students follows; all students should consult an engineering
advisor. The student should also visit the Montgomery College
Engineering Advising website at www.montgomerycollege.edu/
engineeringadvising for up-to-date comprehensive information.

Program Outcomes
Upon completion of this program, a student will be able to:

• Identify, formulate, and solve basic physics and engineering
  problems in mechanics and energy system.
• Analyze and design simple mechanical system using
  analytical method(s).
• Use appropriate computer application software in mechanical
  engineering.

Program Advisors
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For more information, please visit https://
www.montgomerycollege.edu/engineering-advising

To view the Advising Worksheet, please visit https://
www.montgomerycollege.edu/documents/counseling-and-
advising/advising-worksheets/current-catalog/404.pdf

2024-2025

Program Advising Guide
An Academic Reference Tool for Students

404
MECHANICAL ENGINEERING AREA OF CONCENTRATION, ENGINEERING SCIENCE
ASSOCIATE OF SCIENCE: 404
MECHANICAL ENGINEERING AREA OF CONCENTRATION, ENGINEERING SCIENCE AS

Suggested Course Sequence
A suggested course sequence for full-time students follows. All students should review this advising guide and consult an advisor.

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>ENGL 102 - Critical Reading, Writing, and Research 3 semester hours (ENGF)</td>
<td>ENES 102 - Statics 3 semester hours</td>
</tr>
<tr>
<td>MATH 181 - Calculus I 4 semester hours (MATF)</td>
<td>MATH 182 - Calculus II 4 semester hours</td>
</tr>
<tr>
<td>CHEM 135 - General Chemistry for Engineers 4 semester hours</td>
<td>PHYS 161 - General Physics I: Mechanics and Heat 3 semester hours (NSND)</td>
</tr>
<tr>
<td>OR</td>
<td>Behavioral and Social Sciences Distribution 3 semester hours (BSSD) **</td>
</tr>
<tr>
<td>CHEM 132 - Principles of Chemistry II 4 semester hours</td>
<td>Humanities Distribution 3 semester hours (HUMD)</td>
</tr>
<tr>
<td>ENES 100 - Introduction to Engineering Design 3 semester hours (NSND/GEEL)</td>
<td>** Behavioral and Social Sciences Distribution (BSSD) courses must come from different disciplines.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Third Semester</th>
<th>Fourth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENES 206 - MATLAB for Engineers 1 semester hour</td>
<td>ENES 220 - Mechanics of Materials 3 semester hours</td>
</tr>
<tr>
<td>ENES 221 - Dynamics 3 semester hours</td>
<td>ENES 232 - Thermodynamics 3 semester hours</td>
</tr>
<tr>
<td>ENES 272 - Introduction to Computer Aided Design 2 semester hours</td>
<td>MATH 282 - Differential Equations 3 semester hours</td>
</tr>
<tr>
<td>MATH 280 - Multivariable Calculus 4 semester hours</td>
<td>PHYS 263 - General Physics III: Waves, Optics, and Modern Physics 4 semester hours</td>
</tr>
<tr>
<td>PHYS 262 - General Physics II: Electricity and Magnetism 4 semester hours (NSLD)</td>
<td>Arts Distribution 3 semester hours (ARTD)</td>
</tr>
<tr>
<td>Behavioral and Social Sciences Distribution 3 semester hours (BSSD) **</td>
<td>** Behavioral and Social Science Distribution (BSSD) courses must come from different disciplines.</td>
</tr>
</tbody>
</table>

** Total Credit Hours: 63 **

Advising Notes
Most engineering students will start at MC missing one or more pre-requisites for CHEM 131, CHEM 132, CHEM 135, ENGL 102, ENES 100, and MATH 181.

The appropriate initial chemistry courses will be determined by the student's score on the Chemistry Placement Exam, mathematics level, AP/IB credits, or transfer credits. Possible courses include CHEM 099, CHEM 131, CHEM 132, or CHEM 135. Either CHEM 132 or CHEM 135 satisfies the required chemistry credit for UMCP. CHEM 131-CHEM 132 satisfies the required chemistry credit for UMBC, but CHEM 135 does not.

The pre-requisite for ENGL 102 is ENGL 101 or ENGL 101A. English course placement is determined by the Accuplacer English/Reading Test.

The co-requisite for ENES 100 is MATH 165 or higher.

The pre-requisite for MATH 181 is MATH 165 (Precalculus). Mathematics initial course placement will be determined by the ALEKS Math Placement, Accuplacer Math Test, AP/IB credit, or transfer credits.

CMSC 140 (3) or ENEE 150 (3) or CMSC 203 (4) and either ENES 240 (3) or ENES 206 (1) combined can be equivalent to UMCP's ENME 202 (3).

AA and AS programs require one global and cultural perspectives (GCP) General Education course.
Transfer Opportunities
Montgomery College has partnerships with multiple four-year institutions and the tools to help you transfer. To learn more, please visit https://www.montgomerycollege.edu/transfer or http://artsys.usmd.edu.

Get Involved at MC!
Employers and Transfer Institutions are looking for experience outside the classroom.
MC Student Clubs and Organizations: https://www.montgomerycollege.edu/life-at-mc/student-life/
Engineering Student Professional Groups: https://www.montgomerycollege.edu/academics/programs/engineering-science/resources.html

Related Careers
Some require a Bachelor’s degree.
Energy Auditor, Security Management Specialist, Compliance Manager, Supply Chain Manager, Software Developer, Geospatial Information Scientist and Technologist.

Career Services
Montgomery College offers a range of services to students and alumni to support the career planning process. To learn more, please visit https://www.montgomerycollege.edu/career

Career Coach
A valuable online search tool that will give you the opportunity to explore hundreds of potential careers or job possibilities in Maryland and the Washington D.C. metropolitan area. Get started today on your road to a new future and give it a try. For more information, please visit https://montgomerycollege.emsicc.com

Notes: