MECHANICAL ENGINEERING, B.S. (BEHREND)

Begin Campus: Any Penn State Campus
End Campus: Erie

Suggested Academic Plan

The suggested academic plan(s) listed on this page are the plan(s) that are in effect during the 2021-22 academic year. To access previous years’ suggested academic plans, please visit the archive (https://bulletins.psu.edu/undergraduate/archive/) to view the appropriate Undergraduate Bulletin edition (Note: the archive only contain suggested academic plans beginning with the 2018-19 edition of the Undergraduate Bulletin).

Mechanical Engineering, B.S. at Erie Campus

The course series listed below provides only one of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit in policies, procedures, educational offerings, and requirements at any Campus. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit.

First Year

<table>
<thead>
<tr>
<th>Credits</th>
<th>Spring</th>
<th>Fall</th>
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<tbody>
<tr>
<td>CHEM 110*†</td>
<td>3</td>
<td>CMPSC 200†</td>
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<td>CHEM 111†</td>
<td>1</td>
<td>ECON 102 or 104†</td>
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<tr>
<td>EDSGN 100S †, 3.5</td>
<td>3</td>
<td>MATH 141*†, †, †</td>
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<tr>
<td>ENGL 15 or 30H</td>
<td>3</td>
<td>MATH 220†</td>
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<tr>
<td>MATH 140*†, †</td>
<td>4</td>
<td>PHYS 211†</td>
</tr>
<tr>
<td>General Education Course</td>
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Second Year

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<tr>
<th>Credits</th>
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<tbody>
<tr>
<td>EMCH 211*</td>
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<td>EE 211</td>
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<tr>
<td>MATH 230</td>
<td>4</td>
<td>EMCH 212*</td>
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<tr>
<td>MATH 251*</td>
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<td>EMCH 213*</td>
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<tr>
<td>PHYS 212†</td>
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<td>ME 300*</td>
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<tr>
<td>General Education Course (GHW)</td>
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<td>PHYS 214†, †</td>
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Third Year

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<tr>
<td>ENGL 202C†</td>
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<td>CAS 100†</td>
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<td>ME 320*</td>
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<td>ME 357*</td>
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<td>ME 345W*</td>
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<td>ME 365*</td>
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<tr>
<td>ME 349*</td>
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<td>ME 367*</td>
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<tr>
<td>ME 380*</td>
<td>3</td>
<td>ME 410*</td>
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<tr>
<td>MATSE 259*</td>
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Fourth Year

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<tr>
<th>Credits</th>
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<tbody>
<tr>
<td>ME 449*†</td>
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<td>ME 449*‡</td>
</tr>
<tr>
<td>ME 468*</td>
<td>3</td>
<td>Program Elective (School Approved List)*</td>
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<td>Lab Elective (300, 400-Level)*</td>
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<td>Program Elective (School Approved List)*</td>
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Total Credits 131

* Course requires a grade of C or better for the major
† Course requires a grade of C or better for General Education
‡ Course is an Entrance to Major requirement
‡† Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy University Requirements (United States and International Cultures).

W, M, X, and Y are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

GWS, QQ, GHW, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and QQ) and Knowledge Domains (GHW, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and QQ) require a grade of ‘C’ or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

1. The following course is only offered in the FALL semester: ME 448
2. The following courses are only offered in the SPRING semester: ME 449
3. Course will satisfy First-Year Seminar requirement.
4. Course will satisfy Writing Across the Curriculum requirement.
5. Course will satisfy Writing Across the Curriculum requirement.
6. Students starting at a location other than Penn State Behrend must take EDSGN 100 plus a seminar course.
7. Interested students may substitute BIOL 141 or CHEM 112 for both CHEM 111 and PHYS 214.
8. ME 380 or the combination of MATSE 259 and ME 365 can be taken in either semester of the Third Year.

School-Approved Electives for Mechanical Engineering: This elective list is subject to change.

Mechanical Engineering students at Behrend are required to take four 3-credit courses and one 1-credit lab (13 total credits) of technical
electives. The courses must be selected from one of the following two thematic areas:

**Technical**

Take one Lab Course:
- ME 308 Fluid Flow and Heat Transfer Laboratory (fall and spring)
- ME 424 Additive Manufacturing Lab (fall and spring)
- ME 465 Introduction to Manufacturing Laboratory (fall and spring)
- ME 492 Dynamics and Vibration Lab (spring)

Take two courses from Group 1:
- BME 408 Solid Mechanics of Biological Materials (spring)
- EMCH 471 Engineering Composite Materials (spring)
- ME 370 Vibration of Mechanical Systems (fall and spring)
- ME 401 Refrigeration and Air Conditioning (spring)
- ME 408 Energy Systems (spring)
- ME 428 Applied Computational Fluid Dynamics (fall)
- ME 467 Applied Finite Element Analysis (fall and spring)
- ME 469 Metallic Manufacturing Processes (spring)
- ME 491 Bioengineering Applications of Mechanical Engineering (fall)

Take one course from Group 2:
- Any course in Group 1
- IE 405 Deterministic Models in Operations Research (spring only)
- MATH 412 Fourier Series and Partial Differential Equations (fall only, odd years)
- MATH 449 Applied Ordinary Differential Equations (spring only, odd years)
- MATH 455 Introduction to Numerical Analysis I (fall only)
- MATH 456 Introduction to Numerical Analysis II (spring only, even years)
- MATH 482 Mathematical Methods of Operations Research (spring only, even years)
- PHYS 400 Intermediate Electricity and Magnetism (fall only, even years)
- PHYS 419 Theoretical Mechanics (spring only, even years)
- PHYS 458 Intermediate Optics (spring only, odd years)
- STAT 414 Introduction to Probability Theory (fall only, odd years)

Take one course from Group 3:
- Any course in Group 1 or 2
- IE 302 Engineering Economy (spring preferred)
- ME 494 Research Project*
- ME 495 Internship*
- ME 496 Independent Studies*
- ME 497 Special Topics*
- MET 457 Lean Manufacturing
- MGMT 409 Project Management for Engineers (fall and spring)
- PSYCH 444 Engineering Psychology (fall, NOTE: requires PSYCH 100)
- QC 450 Quality Control and Quality Improvement (spring)

*Selection of ME 494-ME 497 courses require written approval of the program coordinator.

**Engineering Management**

Take one Lab Course:
- ME 308 Fluid Flow and Heat Transfer Laboratory (fall and spring)
- ME 424 Additive Manufacturing Lab (fall and spring)
- ME 468 Introduction to Manufacturing Laboratory (fall and spring)
- ME 492 Dynamics and Vibration Lab (spring)
- ME 424 Additive Manufacturing Lab (fall and spring)

Take the following two courses:
- MGMT 409 Project Management for Engineers (fall and spring)
- IE 302 Engineering Economy (spring preferred)

Take two additional courses from the following list:
- BME 408 Solid Mechanics of Biological Materials (spring)
- EMCH 471 Engineering Composite Materials (spring)
- IE 405 Deterministic Models in Operations Research (spring only)
- MATH 482 Mathematical Methods of Operations Research (spring only, even years)
- ME 370 Vibration of Mechanical Systems (fall and spring)
- ME 401 Refrigeration and Air Conditioning (spring)
- ME 408 Energy Systems (spring)
- ME 428 Applied Computational Fluid Dynamics (fall)
- ME 467 Applied Finite Element Analysis (fall and spring)
- ME 469 Metallic Manufacturing Processes (spring)
- ME 491 Bioengineering Applications of Mechanical Engineering (fall)

Students in the Engineering Management thematic who also complete either the Operations and Supply Chain Management minor or the Technical Sales minor may substitute 400-level SCM courses for the 6 additional credits of 400-level IE, MATH or ME courses.

**Advising Notes:**
- Only students who have gone through the entrance-to-major process and have been accepted into this major may register for junior and senior-level ME courses.