

# Mechanical Engineering Major

The Mechanical Engineering program (ABET-accredited) is designed to prepare students for a wide range of engineering careers in industry and covers topics in thermal-fluid and mechanical systems. Students are given a broad education in engineering topics along with foundational math and sciences while experiencing engineering analysis and design through open-ended and hands-on projects. Students in their senior year pursue more specific interests and complete a two-course sequence of capstone design. Upon graduation, students will have the opportunity to pursue careers in aerospace, automotive, biomedical, robotics, building systems, and renewable energy among many others or consider graduate school for an advanced degree in the field.

## BS: Mechanical Engineering 2023 – 2024 (Applied Math minor included)

Catalog Expires in August 2024

Name: \_\_\_\_\_

L# \_\_\_\_\_

ACT/SAT: \_\_\_\_\_ EPS/MPT: \_\_\_\_\_ Honors: \_\_\_\_\_ DE/AP/IB: \_\_\_\_\_

Total Hours:130

|                            |   |  |  |  |   |                                      |                            |
|----------------------------|---|--|--|--|---|--------------------------------------|----------------------------|
| <b>FR Fall</b><br>15 hrs   | BI 1093<br>The Story of Israel                        | LU 1203<br>Lipscomb Experience                                       | <b>*MA 1314</b><br><b>Calculus 1</b><br>[SAT≥620, ACT≥26, or MPT≥30] | PE 2012<br>Lifetime Wellness                                     | ENGR 1113<br>Intro to Engineering (with lab)<br>[MA 1113 or equivalent] | ENGR 0110<br>Networking/PD           |                            |
| <b>FR Spring</b><br>17 hrs | BI 1073<br>The Story of Jesus                         | EN 1313<br>University Writing<br>[EPS≥3 or EN 1113]                  | MA 2314<br>Calculus 2<br>[MA 1314]                                   | PH 2414<br>General Physics 1 (with lab)<br>[MA 1314]             | ME 2513<br>ME Computer Apps<br>[MA 1135, ENGR 1113]                     | ENGR 0120<br>Networking/PD           |                            |
| <b>SO Fall</b><br>17 hrs   | BI 1083<br>The Story of the Church                    | ME 2113<br>Statics<br>[PH 2414]                                      | MA 2324<br>Calculus 3<br>[MA 2314]                                   | CM 1113 & 1211<br>General Chemistry 1 & lab<br>[MA 1113]         | ME 2053<br>Principles of ME Design<br>[ME 2513, PH 2414, MA 2314]       | ENGR 0210<br>Networking/PD           |                            |
| <b>SO Spring</b><br>15 hrs | MA 3133<br>Differential Equations<br>[MA 2314]        | ME 3113<br>Strength of Materials<br>[ME 2113, MA 2314]               | ME 2123<br>Dynamics<br>[ME 2113, MA 2314]                            | EECE 2213<br>Circuits 1<br>[ENGR 1113, MA 1314]                  | EN 3143<br>Technical Writing<br>[EN 1313]                               | ENGR 0220<br>Networking/PD           |                            |
| <b>JR Fall</b><br>15 hrs   | ENGR 3303<br>Applied Math<br>[MA 3133]                | ME 3443<br>Engineering Materials<br>[ME 3113, CM 1113 & 1211]        | ME 3613<br>Fluid Mechanics<br>[MA 2324, ME 2123]                     | ME 3703<br>Thermodynamics<br>[CM 1113 & 1211, MA 2324, PH 2414]  | LULT 2xn3<br>Integrated Literature<br>[EN 1313]                         | ENGR 0310<br>Networking/PD           |                            |
| <b>JR Spring</b><br>18 hrs | ENGR 3943<br>Engr Economy & Planning<br>[JR standing] | ME 3313<br>Mechanical Vibrations<br>[ME 2123, ME 2053, MA 3133]      | ME 3413<br>Dynamics of Machinery<br>[ME 2123, ME 2053]               | ME 3803<br>Heat Transfer<br>[MA 3133, ME 2513, ME 3613, ME 3703] | ME 3213<br>Instr/Meas & Lab<br>[ME 3113, ME 3613, EECE 2213]            | ENGR 0320<br>Networking/PD           |                            |
| <b>SR Fall</b><br>18 hrs   | ENGR 4943<br>Capstone Design 1<br>[ENGR 3943]         | ME 4423<br>Design of Machine Elements<br>[ME 3113, ME 3413, EN 3143] | ME 4513<br>Design of Thermal Fluid Systems<br>[ME 3803, EN 3143]     | **ME 3xn3<br>Technical Elective                                  | BI 3xn3<br>Bible Elective   | LUEG 3xn3<br>Engagements<br>[60 hrs] | ENGR 0410<br>Networking/PD |
| <b>SR Spring</b><br>15 hrs | ENGR 4953<br>Capstone Design 2<br>[ENGR 4943]         | ENGR 3513<br>Control Systems<br>[EECE 2213, ME 2123, MA 3133]        | **BY/CM/MA/PH Elective<br>From approved list: 3 hr min               | **ME 3xn3<br>Technical Elective                                  | BI 3123<br>Engineering Ethics   | ENGR 0420<br>Networking/PD           |                            |

\*It is recommended that students are prepared to enroll in MA 1314 Calculus 1 during fall of freshman year. Students starting their program in MA 1135 Precalculus may be able to complete the program in four years by taking MA 2314 Calculus 2 and PH 2414 General Physics 1 during the summer between freshman and sophomore year. Students starting in MA 1113 College Algebra may choose to complete the program in five years or work with their advisor to find opportunities to reduce the program length.

\*\*Students have options to customize their degree through two Mechanical Engineering technical electives and a BY/CM/MA/PH elective course. Approved options for these courses are shown in the catalog or may be discussed with the student's academic advisor.

In addition to the above courses, students must also complete the Fundamentals of Engineering (FE) Exam prior to graduation. Completing the FE Exam provides a path toward licensure as a Professional Engineering (PE).

**Prerequisites required prior to – not concurrently. A minimum grade of C is required in math, science, and engineering prerequisite courses.**

**This is a suggested guide to course scheduling and does not replace the university catalog as the official listing of program requirements.**

Students interested in studying abroad through the Global Learning program should work with their advisor to adjust their degree plan. Alternative degree plans are available with fall or spring sophomore year study abroad options for semester-long programs. The engineering program also offers a Maymester study abroad opportunity to Germany which is recommended after sophomore or junior year. During the four-week Maymester, students complete two required engineering courses with opportunities to visit well-known engineering companies in Germany.



[www.lipscomb.edu/academics/programs/mechanical-engineering](http://www.lipscomb.edu/academics/programs/mechanical-engineering)

# Mechanical Engineering Major

## Required Courses

| General Education Requirements |   | Credit | Semester |
|--------------------------------|---|--------|----------|
| EN 3143                        | Technical Writing ( <i>satisfies Communication course</i> ) | 3      | F, SP    |
| BI 3123                        | Engineering Ethics ( <i>satisfies Bible elective</i> )      | 3      | SP       |

### Related Math and Science Courses

|                |                              |   |           |
|----------------|------------------------------|---|-----------|
| MA 1314        | Calculus 1                   | 4 | F, SP, SU |
| MA 2314        | Calculus 2                   | 4 | F, SP, SU |
| MA 2324        | Calculus 3                   | 4 | F, SP, SU |
| MA 3133        | Differential Equations       | 3 | F, SP     |
| PH 2414        | General Physics 1 (with lab) | 4 | SP, SU    |
| CM 1113 & 1211 | General Chemistry 1 & lab    | 4 | F, SP, SU |

Choose 1 of the following courses (3 or 4 credits) for the BY/CM/MA/PH elective:

BY 1134, BY 1144, BY 2213, CM 1123/1221, PH 2424, MA 4303, MA 4403, or other by approval

### Engineering Courses

|           |  |   |        |
|-----------|--|---|--------|
| ENGR 0xy0 | Networking and Professional Development    | 0 | F, SP  |
| ENGR 1113 | Introduction to Engineering (with lab)     | 3 | F      |
| ENGR 3303 | Applied Math                               | 3 | F      |
| ENGR 3513 | Control Systems                            | 3 | SP     |
| ENGR 3943 | Engineering Economy & Planning             | 3 | SP     |
| ENGR 4943 | Capstone Design 1                          | 3 | F      |
| ENGR 4953 | Capstone Design 2                          | 3 | SP     |
| EECE 2213 | Circuits 1                                 | 3 | SP     |
| ME 2513   | Mechanical Engineering Computer Apps       | 3 | SP     |
| ME 2053   | Principles of ME Design                    | 3 | F      |
| ME 2113   | Statics                                    | 3 | F, SP  |
| ME 2123   | Dynamics                                   | 3 | SP, SU |
| ME 3113   | Strength of Materials                      | 3 | SP, SU |
| ME 3443   | Engineering Materials                      | 3 | F      |
| ME 3613   | Fluid Mechanics                            | 3 | F      |
| ME 3703   | Thermodynamics                             | 3 | F      |
| ME 3313   | Mechanical Vibrations                      | 3 | SP     |
| ME 3413   | Dynamics of Machinery                      | 3 | SP     |
| ME 3803   | Heat Transfer                              | 3 | SP     |
| ME 3213   | Instrumentation and Measurement (with lab) | 3 | SP     |
| ME 4423   | Design of Machine Elements                 | 3 | F      |
| ME 4513   | Design of Thermal Fluid Systems            | 3 | F      |

Choose 2 of the following courses (6 credits) for the ME 3xn3 electives:

ENGR 3613, ME 4123, ME 4223, ME 4303, ME 4523, ME 4613, ME 4713, ME 4723, ME 4733, ME 4743

2023-2024 Academic Year

**TOTAL: 95**

NOTE: All students majoring in Mechanical Engineering must achieve a "C" or above in all required math, science, and engineering prerequisite courses.



[www.lipscomb.edu/academics/programs/mechanical-engineering](http://www.lipscomb.edu/academics/programs/mechanical-engineering)