



# Mechanical Engineering

College of Engineering

The mechanical engineer's training is the broadest among the several fields of engineering. The mechanical engineer uses the techniques of mathematics combined with a specialized knowledge of the thermal and energy sciences, solid and fluid mechanics, and the properties of materials. This information is supplemented by an understanding of manufacturing processes, the design and control of systems, and the economics of the technological community.

Admission to the program is selective. Students should refer to the UK *Bulletin* for general information concerning admission and graduation requirements.

## Degree Requirements

The following curriculum meets the requirements for a Bachelor of Science in Mechanical Engineering, provided the student satisfies the graduation requirements of the College of Engineering.

### Freshman Year

#### First Semester

ME 101 Introduction to Mechanical Engineering .....	3
CHE 105 General College Chemistry I .....	3
MA 113 Calculus I .....	4
ENG 104 Writing: An Accelerated Foundational Course .....	4

#### Second Semester

ME 151 Manufacturing Engineering .....	3
CHE 107 General College Chemistry II .....	3
MA 114 Calculus II .....	4
COM 181 Basic Public Speaking .....	3
University Studies* .....	3

### Sophomore Year

#### First Semester

PHY 231 General University Physics .....	4
PHY 241 General University Physics Laboratory .....	1
MA 213 Calculus III .....	4
CS 221 First Course in Computer Science for Engineers .....	2
ME 205 Computer Aided Engineering Graphics .....	3
Second-Tier Writing Requirement Course** .....	3

#### Second Semester

ME 220 Engineering Thermodynamics I .....	3
PHY 232 General University Physics .....	4
PHY 242 General University Physics Laboratory .....	1
MA 214 Calculus IV .....	3
EM 221 Statics .....	3
University Studies* .....	3

### Junior Year

#### First Semester

ME 321 Engineering Thermodynamics II .....	3
ME 330 Fluid Mechanics .....	3
EM 302 Mechanics of Deformable Solids .....	3
EM 313 Dynamics .....	3
EE 305 Electrical Circuits and Electronics .....	3
University Studies* .....	3

#### Second Semester

ME 310 Engineering Experimentation I .....	3
ME 344 Mechanical Design .....	3
ME 325 Elements of Heat Transfer .....	3
ME 340 Introduction to Mechanical Systems .....	3
Mathematics Elective*** .....	3

### Senior Year

#### First Semester

ME 411 ME Capstone Design I .....	3
ME 311 Engineering Experimentation II .....	3
ME 440 Design of Control Systems .....	3
ME 501 Mechanical Design with Finite Element Methods .....	3
Technical Elective† .....	3

#### Second Semester

ME 412 ME Capstone Design II .....	3
Technical Electives† .....	6
Supportive Elective†† .....	3
University Studies* .....	6

\*To be selected from University Studies areas in Social Sciences, Humanities and Cross-Cultural in conjunction with the academic advisor.

\*\*To be selected in consultation with the academic advisor from acceptable courses as provided in the University of Kentucky *Bulletin*.

\*\*\*Mathematics elective must meet two criteria: (1) be offered by the department of mathematics or statistics; and (2) be higher course content than required mathematics courses. See *Undergraduate Handbook* for suggested courses.

†Technical Electives – see list below.

††The supportive elective is to be chosen from any University course, excluding more elementary versions of required courses, such as precalculus mathematics or PHY 211.

**Technical Electives:** Students should select from the list below.

- BME 501 Foundations of Biomedical Engineering
- BME 530 Biomedical Instrumentation
- BAE 502 Modeling of Biological Systems
- ME 380 Topics in Mechanical Engineering
- ME 395 Independent Work in Mechanical Engineering
- ME/MFS 503 Lean Manufacturing Principles and Practices
- ME/MFS 505 Modeling of Manufacturing Processes and Machines
- ME/MSE 506 Mechanics of Composite Materials
- ME/MFS 507 Design for Manufacturing
- ME/MFS 512 Manufacturing Systems
- ME 513 Mechanical Vibrations
- ME 527 Applied Mathematics in the Natural Sciences I
- ME 530 Gas Dynamics
- ME 531 Fluid Dynamics I
- ME 532 Advanced Strength of Materials
- ME/MSE 556 Introduction to Composite Materials
- ME 560 Engineering Optics
- ME 563 Basic Combustion Phenomena
- ME/BAE 580 Heating, Ventilating and Air-Conditioning
- ME 599 Topics in Mechanical Engineering
- MSE 201 Materials Science
- EGR 599 Topics in Engineering