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 Orientation to Mechanical Engineering (Freshman and Transfer Student) 1
ME 105 Basic Engineering Graphics 2
CHE 105 General College Chemistry I 3
MA 113 Calculus I 4
ENG 101 Writing I 3
University Studies* 3

Second Semester

ME 151 Manufacturing Engineering 3
CHE 107 General College Chemistry II 3
University Studies* 3
MA 114 Calculus II 4
ENG 102 Writing II 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
University Studies* 3
COM 181 Basic Public Speaking 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
Mathematics Elective* 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
ME 406 Computer-Aided Graphics and Design 3

Senior Year

First Semester

ME 407 Engineering Ethics 1
ME 311 Engineering Experimentation II 3
ME 440 Design of Control Systems 3
ME 501 Mechanical Design with Finite Element Methods 3
Technical Electives** 6

Second Semester

ME 408 Safety Engineering 2
ME 412 Senior Design Project 3
EE 307 Circuit Analysis with Applications 4
Technical Elective** 3
Supportive Elective*** 3
University Studies* 3

*To be selected from University Studies areas in Social Sciences, Humanities, Cross-Cultural and Cross-Disciplinary in consultation with the academic advisor. A minimum of 18 credits in the humanities and social sciences are required.

**All electives to be selected in consultation with the academic advisor.

***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.

ME 346 Mechanical Systems Design
ME 347 Dynamic Analysis of Design Problems
ME 358 Economic Analysis of Mechanical Systems
ME 359 Management Engineering
ME 366 Thermal Power 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/EM 506 Mechanics of Composite Materials
ME/MFS 507 Design for Manufacturing
ME 510 Dynamics and Design of Robot Manipulators
ME 512 Manufacturing Systems
ME 514 Nuclear Reactor Analysis and Fuel Management
ME 530 Gas Dynamics
ME 531 Fluid Dynamics I
ME 542 Kinematic Synthesis of Mechanisms
ME/EM 556 Introduction to Composite Materials
ME 560 Engineering Optics
ME 563 Basic Combustion Phenomena
ME 566 Direct Energy Conversion Processes
ME 568 Solar Energy Systems
ME 580 Heating, Ventilating and Air-Conditioning
ME 583 Biotechnology
ME 599 Topics in Mechanical Engineering
CE 521 Engineering Economy
EGR 599 Topics in Engineering
EM 513 Mechanical Vibrations
EM 531 Advanced Strength of Materials
MSE 201 Materials Science