

Materials Engineering

College of
Engineering

The materials engineer is responsible for the selection, preparation and application of existing materials and for the development of new and improved materials. Materials engineers study the relationships between atomic and/or molecular constitution, microstructure and physical properties including mechanical, thermal, electrical, and optical behavior. Classes of materials include metals, ceramics, polymers, and electronic materials.

Admission to the degree 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 B.S. in Materials Engineering, provided the student satisfies the graduation requirements of the College of Engineering.

Freshman Year

First Semester	Hours
MSE 101 Materials Engineering	1
CHE 105 General College Chemistry I	3
CHE 111 Laboratory to Accompany General Chemistry I	1
CIS/WRD 110 Composition and Communication I	3
MA 113 Calculus I	4
UK Core	3
Second Semester	
CHE 107 General College Chemistry II	3
CHE 113 Laboratory to Accompany General Chemistry II	2
MA 114 Calculus II	4
CS 221 First Course in Computer Science for Engineers	2
CIS/WRD 111 Composition and Communication II	3
UK Core	3

Sophomore Year

First Semester	Hours
MSE 201 Materials Science	3
CHE 236 Survey of Organic Chemistry	3
MA 213 Calculus III	4
PHY 231 General University Physics	4
PHY 241 General University Physics Laboratory	1
MSE 202 Materials Science Laboratory	1
Second Semester	
MSE 301 Materials Science II	3
MSE 351 Material Thermodynamics	3
MA 214 Calculus IV	3
PHY 232 General University Physics	4
EM 221 Statics	3

Junior Year

First Semester	Hours
MSE 401G Metal and Alloys	3
MSE 404G Polymeric Materials	3
CME 200 Process Principles	3
EM 302 Mechanics of Deformable Solids	3
ENG 2XX Writing Intensive Course	3
STA 210 Making Sense of Uncertainty: An Introduction to Statistical Reasoning	3
Second Semester	
MSE 403G Ceramic Engineering and Processing	3
MSE 402G Electronic Materials and Processing	3
PHY 361 Principles of Modern Physics	3
MSE 535 Mechanical Properties of Materials	3
MSE 407 Materials Laboratory I	3
UK Core	3

Senior Year

First Semester	Hours
MSE 585 Materials Characterization Techniques	3
MSE 436 Material Failure Analysis	3
EE 305 Electrical Circuits and Electronics	3
MSE 408 Materials Laboratory II	3
Technical Elective**	3
UK Core	3
Second Semester	
MSE 480 Materials Design	3
MSE 538 Metals Processing	3
Technical Elective**	3
Supportive Elective*	3
UK Core	3

*Supportive elective is any university course, excluding more elementary versions of required courses, such as precalculus mathematics or PHY 211.

**Choose from the list of Technical Electives above.