

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
EGR 101 Engineering Exploration I § Δ	1
EGR 102 Fundamentals of Engineering Computing	2
CHE 105 General College Chemistry I	
or	
PHY 231 General University Physics °	4
CHE 111 Laboratory to Accompany General Chemistry I	1
CIS/WRD 110 Composition and Communication I	3
MA 113 Calculus I	4
Second Semester	
EGR 103 Engineering Exploration II Δ	2
CIS/WRD 111 Composition and Communication II	3
MA 114 Calculus II	4
PHY 231 General University Physics	
or	
CHE 105 General College Chemistry I °	4
PHY 241 General University Physics Laboratory ‡	1
UK Core – Social Sciences	3

Sophomore Year

First Semester	Hours
MSE 201 Materials Science	3
MSE 202 Materials Science Laboratory	1
MA 213 Calculus III	4
CHE 107 General College Chemistry II	3
CHE 113 Laboratory to Accompany General Chemistry II	2
EM 221 Statics	3
Second Semester	
MSE 301 Materials Science II	3
MSE 351 Materials Thermodynamics	3
MA 214 Calculus IV	3
PHY 232 General University Physics	4
CHE 236 Survey of Organic Chemistry	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
STA 381 Engineering Statistics – A Conceptual Approach	3
UK Core – Humanities	3
Second Semester	
MSE 402G Electronic Materials and Processing	3
MSE 403G Ceramic Engineering and Processing	3
MSE 407 Materials Laboratory I***	3
MSE 535 Mechanical Properties of Materials	3
PHY 361 Principles of Modern Physics	3

Senior Year

First Semester	Hours
MSE 408 Materials Laboratory II	3
MSE 436 Material Failure Analysis	3
MSE 585 Materials Characterization Techniques	3
EE 305 Electrical Circuits and Electronics	3
Technical Elective** (MSE prefix)	3
UK Core – Citizenship - USA	3
Second Semester	
MSE 480 Materials Design	3
MSE 538 Metals Processing	3
Technical Elective**	3
Supportive Elective*	3
UK Core – Global Dynamics	3

§ Transfer students who declare a major will take EGR 112, Engineering Exploration for Transfer Students, in place of EGR 101.

Δ Students must complete both EGR 101 and EGR 103 to fulfill the UK Core Arts and Creativity requirement.

° Based on advisor consult.

‡ Only if enrolled in PHY 231.

*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.

***Graduation Composition and Communication Requirement (GCCR) course.

University of Kentucky is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award associate, baccalaureate, masters, and doctorate degrees. Contact the Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097, call 404-679-4500, or online at www.sacscoc.org for questions about the accreditation of University of Kentucky.