

# MATERIALS ENGINEERING



Revolutionary technologies that transform society, healthcare and how we impact our environment are only possible when we have the right materials. Whether it's 3D printed metals that are stronger, lighter and more resistant to corrosion; batteries that hold more energy and charge faster; or bio-inspired polymers that are responsive and sustainable, materials engineers make new technologies possible by understanding and designing the processing, structure and properties of materials themselves.

FOR MORE INFORMATION, VISIT:

[www.engr.uky.edu/explore/materials-engineering](http://www.engr.uky.edu/explore/materials-engineering)

## MATERIALS ENGINEERING CURRICULUM SAMPLE

This is a sample list of classes a student will take to pursue a degree in materials engineering. In addition to the materials engineering curriculum, students must complete the pre-engineering requirements and general education coursework, called UK Core.

Note: This sample represents one of several paths to a materials engineering degree. Consult the departmental website for details on specific paths.

### Freshman Year

Calculus I and II	8
Composition & Communication I and II	6
Chemistry I and Physics I and Labs	10
Engineering Exploration I and II	3
Fundamentals of Engineering Computing	2
UK Core Course	3
<b>Total hours</b>	<b>32</b>

### Sophomore Year

Calculus III and IV	7
Chemistry II and Lab	5
Materials Science I and II and Lab	7
Materials Thermodynamics	3
Physics II	4
Statics	3
Survey of Organic Chemistry	3
<b>Total hours</b>	<b>32</b>

### Junior Year

Ceramic Engineering and Processing	3
Electronic Materials and Processing	3
Metals & Alloys	3
Engineering Statistics	3
Materials Lab I	3
Mechanics of Deformable Solids	3
Mechanical Properties of Materials	3
Polymeric Materials	3
Principles of Modern Physics	3
Process Principles	3
UK Core Course	3
<b>Total hours</b>	<b>33</b>

### Senior Year

Application of Materials Engr to Design Problems	1
Electrical Circuits & Electronics	3
Materials Characterization Techniques	3
Materials Design	3
Material Failure Analysis	3
Materials Lab II	3
Metals Processing	3
Technical Electives	6
UK Core Courses	6
<b>Total hours</b>	<b>31</b>

## PURSuing MATERIALS ENGINEERING AT UK

Materials engineering students at UK study with an energetic and accessible faculty, and are encouraged to grow personally and professionally through hands-on research projects, industrial cooperative education and service opportunities. Our alumni follow diverse paths; while many enter industrial positions, others pursue advanced engineering and professional degrees at institutions across the nation.

## CAREER PROSPECTS IN MATERIALS ENGINEERING

Materials engineers work at the forefront of rapidly changing technological areas that directly impact society, focusing on problems where the application of novel, precisely engineered materials enables new solutions. Job placement rates and starting salaries are excellent for materials engineering graduates, and our alumni work in a wide range of industries, including aerospace and automotive; biomaterials, implants and medical devices; metals processing; and advanced electronics, polymers, and ceramics.

## UNDERGRADUATE RESEARCH IN MATERIALS ENGINEERING

Materials engineering faculty members welcome undergraduate students into their laboratories as partners in the study of next-generation materials, processes and applications. Research strengths within the program include batteries and energy storage; computational materials science; metals and advanced alloys; nanomaterials; polymers, soft materials and interfaces; and thin films.

## CO-OPS

UK provides numerous opportunities to co-op with companies. Students can co-op during the fall, spring or summer semesters. Those who complete three co-op rotations will receive formal recognition on their transcript and a special cord at graduation. Students work with the Co-op Director and their academic advisor to determine the best timing for their co-op experience.

The University of Kentucky's materials engineering program is accredited by the Engineering Accreditation Commission of ABET, [www.abet.org](http://www.abet.org).

**Revised August 2021.** Information subject to change. For the most up-to-date information on the UK College of Engineering, visit [www.engr.uky.edu](http://www.engr.uky.edu).