

MINING ENGINEERING

Mining engineers find, develop and recover the resources needed to support the daily needs of society from the minerals required to support our daily health to the materials used for roads, buildings, computers and cell phones among items used daily.

The mining engineering discipline requires a broad range of basic engineering skills along with the ability to apply specialized technical knowledge in the areas of geotechnical engineering, explosives engineering, mine ventilation, mine power systems, automation and control, environmental engineering and extractive metallurgy.

Utilizing these unique skills and knowledge, mining operations are developed and operated in a manner that minimizes the cost of the end products while ensuring safe conditions for the mine workers and surrounding areas and limiting the impact on the environment. Mining engineers also oversee the design and operation of processing plants that convert the mined resource into a usable final product or as a material used in the manufacturing industry. During and after the life of a mine, the environmental impacts of mining are remediated through well established and controlled restoration practices.

Pursuing Mining Engineering at UK

The mining engineering program at the University of Kentucky is one of only thirteen accredited programs in the United States. The faculty members are well known and highly respected in their specialized areas throughout academia and the industry. This ensures that students will receive the highest quality education and training from instructors with practical knowledge of the discipline. Hands-on instruction is provided in state-of-the-art laboratories that house modern equipment used in each of the specialty areas of mining engineering. Gas and oil production can also be studied as a specialty area within the program.

First-Year Engineering Program

The University of Kentucky First-Year Engineering program is designed to remove as much guesswork from your major selection as possible. Instead of pushing through a major you don't like, or adding time and expense by changing majors, you can make an informed choice thanks to hands-on, team experiences that expose you to all of our engineering disciplines from the start. If you are certain about your major, the program is still highly beneficial as it

exposes you to other engineering disciplines that you will encounter in the workforce and teaches you skills that you will use throughout the remainder of your engineering curricula. If you are unsure about your major, you may enroll as "undeclared engineering" and choose your major during the second semester.

All incoming freshmen and transfer engineering students take part in the First-Year Engineering program. Freshmen students take a two-semester series which includes an overview of engineering disciplines, computer programming, computer-aided design, MATLAB, engineering design and analysis, project management, ethics in engineering, teamwork and oral and written technical communication. Transfer students complete a course series their first semester focused on similar topics. Studies have shown that students who participate in a First-Year Engineering Program are more successful in upper level engineering courses and are more inclined to graduate with an engineering degree.

Students may directly enroll as pre-engineering students in their chosen major; however, there are minimum admission requirements. Minimum freshman entry requirements are an ACT math score of 23 or a SAT math score of 570. Additionally, students must meet the university's minimum ACT/SAT reading and writing requirements to be admitted to the College of Engineering. Students not eligible to directly enroll in engineering should contact the director of recruitment at visit@enr.uky.edu for alternate pathways.

Experiential Education

Student growth and learning also occur outside the classroom. They occur in research labs working alongside professors and graduate students. They occur on student design teams in the capstone design courses. They occur on cooperative education rotations and internships with companies all over the country. There are also numerous education abroad programs involving international travel and study.

The mining engineering program offers various opportunities to obtain hands-on experience through summer internships and cooperative education programs with mining companies that have operations throughout the U.S. These experiences often lead to full-time engineering positions upon graduation. For those

FOR MORE INFORMATION, VISIT THESE WEBSITES:

Mining Engineering: www.enr.uky.edu/mng

College of Engineering: www.enr.uky.edu

Visit Engineering: www.enr.uky.edu/visit

University of Kentucky: www.uky.edu

Admissions: www.uky.edu/admissions

Scholarships: www.uky.edu/scholarships

Mining Engineering Curriculum Sample

This is a sample list of classes a student will take to pursue a degree in mining engineering. In addition to the mining 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 College of Engineering degree. Consult the departmental websites for details on specific paths.

Freshman Year

Engineering Exploration I and II	3
Fundamentals of Engr Computing	2
Calculus I and II	8
Composition & Communication I and II	6
Chemistry I and Physics I and lab	9
UK Core course	3
Total hours	31

Sophomore Year

Calculus III and IV	7
Statics	3
Physics II	4
Principles of Physical Geology	4
Mining Engineering Fundamentals	3
Fundamentals of Geology	3
Thermodynamics I	3
Elements of Mine Design	3
Deformable Solids and lab	4
Explosives and Blasting	2
Total hours	36

Junior Year

Fluid Mechanics	3
Mine Surveying	2
Minerals Processing and lab	4
Intro to Mine Systems Analysis	3
Underground Mine Design	3
Electrical Circuits and Machinery	3
Mine Safety and Health Management	2
Professional Dev. of Mining Engrs	3
Mine Systems and Economics	4
Surface Mine Design	3
Minerals Processing technical elective	3
UK Core course	3
Total hours	36

Senior Year

Dynamics	3
Mine Plant Machinery	3
Mine Ventilation	3
Rock Mechanics	4
Environmental Control System Design	3
Mine Design Project I and II	4
Technical elective	3
Supportive elective	3
UK Core courses	6
Total hours	32

interested in research, the program offers undergraduate research opportunities in each of the specialized areas of mining engineering. Self-funding of all undergraduate education expenses is achievable by combining the funds earned from internship, co-op and research positions with the numerous scholarships that are available from the department and professional societies and associations.

Student Involvement

Student organizations that are typically of interest to mining engineering students include: the Norwood Student Chapter of the Society for Mining, Metallurgy and Exploration, the International Society of Explosives Engineers, Women in Mining and the Mu Nu Gamma Honor Society. The chapters are very active with a number of activities including those involving intramural sports. Significant participation also occurs regionally and nationally with the professional societies through attendance and active participation at professional meetings that are held throughout the country.

Career Prospects in Mining Engineering

Retirements and growth in the mineral sector over the next 5 – 10 years are expected to create many openings for talented mining engineering graduates at annual salaries in the range of \$60,000 to \$72,000, which are among the highest of any B.S. graduate. As a result of the number of expected retirements, advancing up the career ladder is sure to be faster than most other professions. Opportunities in the mining engineering profession will always be available because of the need to provide resources for the nation and the world in a safe and environmentally friendly manner.

Scholarship Opportunities

Sophomore students can receive up to \$4,000 annually through the scholarship program while junior and senior students receive up to \$6,000 annually. In addition, a variety of scholarships are available from the professional societies.

The University of Kentucky's mining engineering program is accredited by the Engineering Accreditation Commission of ABET, www.abet.org.

Revised July 2017. Information subject to change. For the most up-to-date information on the UK College of Engineering, visit www.engr.uky.edu.