The Mines underground construction and tunnel engineering graduate program is the only one of its kind in North America. Students are educated on the design, construction, rehabilitation and management of underground space, including caverns, shafts and tunnels for commercial, transportation and wastewater use. This interdisciplinary field involves complex soil and rock behavior, groundwater conditions, excavation methods, construction materials, structural design flow, heterogeneity and low tolerance for deformation due to existing infrastructure in urban environments. Students pursuing a graduate degree in this field will gain a strong and interdisciplinary foundation in these topics.

DEGREE OPTIONS

- **Doctor of Philosophy**: 72 credit hours, comprised of 42 credit hours of coursework, 3 credit hours of independent study and a minimum of 24 credit hours of research.
- **Master of Science (thesis based)**: 30 credit hours, comprised of 24 credit hours of coursework and 6 credit hours of research.
- **Master of Science (non-thesis)**: 30 credit hours, comprised of 27 credit hours of coursework and 3 credit hours of independent study.
CORE COURSES

- Engineering Geology and Geotechnics
- Underground Construction Engineering Laboratory I & II
- Underground Construction Engineering in Soft Ground
- Underground Construction Engineering in Hard Rock
- Soil Behavior
- Construction Engineering and Management

RESEARCH

Students often conduct funded research through the Center for Underground Construction and Tunneling, an on-campus, interdisciplinary center dedicated to preparing leaders and advancing knowledge through research and relationships with industry partners. Example research topics include acoustic emissions for damage detection, fracture mechanics in geo-materials, seismic design of tunnels and void detection in tunnel liners.

PROGRAM ADMISSION REQUIREMENTS

- A bachelor’s degree in a science or engineering discipline and prerequisite coursework related to strength of materials (or mechanics of materials) and fluid mechanics.
- Graduate Record Examination (GRE) with quantitative section score of 151 or higher (or 650 on the old scale). Applicants who have graduated from Mines within the past five years are not required to submit GRE scores.
- For international applicants or applicants whose native language is not English, a TOEFL score of 79 or higher (or 550 for the paper-based test, 213 for the computer-based test) is required. In lieu of a TOEFL score, an IELTS score of 6.5 will be accepted.

ACCEPTING APPLICATIONS
TO LEARN MORE, VISIT:
gradprograms.mines.edu/ucte or contact ucte@mines.edu