The Mines quantum engineering program delivers one of the nation’s first quantum engineering graduate programs. With an explosion of interest in quantum technology, revolutionary developments are expected to fundamentally reshape numerous fields. Mines, with its exceptionally strong industry connections and focus on hands-on education, is ideally positioned to meet the need for a trained workforce that can perform the work needed in this growing field. Students will receive training in experimental techniques and will receive an interdisciplinary education equipping them for careers in emerging technologies based on quantum entanglement.

DEGREE OPTIONS

- **Master of Science (thesis based):** 30 credit hours comprised of 21 credit hours of coursework and 9 credit hours of thesis research.
- **Master of Science (non-thesis):** 30 credit hours of coursework.
- **Graduate Certificate:** 12 credit hours, comprised of three core courses and one elective course.
FOCUS AREAS

The problem of building a quantum computer is a complex, interdisciplinary one which requires contributions from a vast array of subfields. Quantum engineering has two tracks, as summarized below. Students must choose a track to complete the program, but they may take courses from both tracks.

- **Quantum Engineering Hardware:** focused on experimental techniques relevant to quantum technology
- **Quantum Engineering Software:** focused on theory, algorithms and simulation

APPLICATION INFORMATION

- The Graduate Record Examination (GRE) is required. Applicants who have graduated with a computer science, engineering or math degree 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 or higher will be accepted.

- Students are expected to have completed two semesters of calculus, along with courses in linear algebra, data structures and upper-level courses in at least three of the following: analysis of algorithms, software engineering, numerical analysis, principles of programming languages, computer architecture, operating systems, dynamics and controls.

ACCEPTING APPLICATIONS

FOR MORE INFORMATION, VISIT: gradprograms.mines.edu or contact Eliot Kapit (ekapit@mines.edu)