Program Description
There is an immediate and growing need for highly trained explosives professionals in the explosive, mining and civil excavating fields and government and defense industries. Employers are looking for engineers and scientists with sophisticated skills in the integration of explosives technology into complex systems in a wide range of applications. Employers are also seeking MS graduates because they can move quickly into managerial positions.

The master of science in Explosives Engineering requires a minimum of 30 hours of graduate credit and is offered as both thesis and non-thesis options. A core of four courses is required of all students and a module of allied courses in departments outside of explosives engineering is encouraged.

Admissions Requirements
A bachelor of science in engineering, technology or a physical science is required. GPA ≥ 3.0; the GPA may be the cumulative GPA or the last 60 hours of the BS program. For a GPA between 3.0 and 2.75, an applicant may be admitted as a probationary student.

The Verbal, Quantitative, and Analytical Writing portions of the Graduate Record Examine (GRE) must be taken with a Quantitative score of 148 (600 based on previous scale) or greater and an Analytical Writing score of at least 3.5. International students must take the examination before admission. U.S. students must take the GRE before the end of their first semester on campus.

For experienced applicants who have significant post baccalaureate work experience, their experience and accomplishments may be assessed by the explosives faculty and taken into consideration. Often a probationary student will first be admitted to the Explosives Engineering Certificate Program. Satisfactorily completing a certificate is an alternate route into the masters and is often used by distance students who do not have the time to study for and take the GRE exam. For information about the Explosives Engineering Graduate Certificate Program, see reverse side.

All participants in explosives courses must submit to a security background check.

Degree Requirements
The MS degree with thesis requires the completion of 24 hours of graduate coursework and six hours of research (Explosives Engineering 490) and the successful completion and defense of a research thesis. For the MS degree non-thesis option, the six hours of research are replaced by an additional explosive course and an industry project.

Four of the following core courses are required of all MS students in Explosives Engineering:
- EXP ENG 5612/MIN ENG 5612 Principles of Explosives Engineering
- EXP ENG 5622/MIN ENG 5622 Blasting Design and Technology
- EXP ENG 5713 Demolition of Building and Structures
- MIN ENG 4922 Tunneling and Underground Construction Techniques
- EXP ENG 6412 Environmental Controls for Blasting
- EXP ENG 6312 Scientific Instrumentation for Explosives and Blasting

There is no formal residency requirement; however, students enrolled in courses with a laboratory component may be required to complete a three-day to one-week laboratory session at Missouri S&T, at a time agreed to with the course instructor.

Application Requirements
Along with the application forms, you must submit copies of your transcripts, GRE scores, a statement of purpose and three letters of recommendation. For more information on the application process, and to download application forms, go online to http://dce.mst.edu/admissions/index.html

Delivery Method
Students will learn by listening to online lectures and through directed self-study. Lectures can be accessed online at a time convenient to the student. Alternatively, a student may use recorded versions on a CD or a DVD. Blackboard is used in course administration.
The Explosives Engineering Graduate Certificate Program is designed to provide formalized education in the area of explosives engineering. Students will be exposed to the theoretical and practical approaches of explosives engineering. Students will learn analysis and design of explosive-related systems and both natural and built structure effects.

Curriculum*

The following courses are required:

- EXP ENG 5612 Principles of Explosives Engineering
- EXP ENG 5622 Blasting Design and Technology

Two of the following courses are required:

- EXP ENG 5001 Pyrotechnics Show Design
- EXP ENG 5112 Explosives Handling and Safety *(on campus only)*
- EXP ENG 5512/MIN ENG 5512 Commercial Pyrotechnics Operations
- EXP ENG 5513 Stage Pyrotechnics & Special Effects
- EXP ENG 5713 Demolition of Buildings & Structures *(on campus only)*
- MIN ENG 4822 Tunneling & Underground Construction Techniques
- EXP ENG 6000 Special Problems *(maximum of 3 credit hours may be taken at the discretion of the program coordinators)*
- EXP ENG 6001 Regulatory Issues in the Explosives Industry
- EXP ENG 6412/MIN ENG 6622 Environmental Controls for Blasting
- EXP ENG 6312 Scientific Instrumentation for Explosives Testing & Blasting *(on campus only)*
- EXP ENG 6212/MIN ENG 6632 Theory of High Explosives

* Curriculum is subject to change. Please contact the department for up-to-date information on courses. Other courses approved by the explosives engineering faculty may be substituted for any of the above listed courses on a case-by-case basis. For course descriptions, please refer to the Graduate Course Catalog online at catalog.mst.edu.

Admission Requirements

The Explosives Engineering Certificate Program is open to all persons holding a B.S. (in applied science, technology or engineering), M.S., or Ph.D degree and who have a minimum of 12 months of post baccalaureate professional employment experience.

Once admitted to the program, the student must take the four designated courses listed above. In order to receive a Graduate Certificate, the student must have an average cumulative grade of 3.0 or better in the certificate courses.

Students admitted to the certificate program will have non-matriculated status; however, if they complete the four-course sequence with a grade of “B” or better in each of the courses taken, they will be admitted to the M.S. Explosives Engineering program, upon application. The Explosive Engineering certificate credits taken by students admitted to the M.S. program will count toward their master's degree in Explosives Engineering.

Students who do not have all of the prerequisite courses necessary to take the courses in the certificate program will be allowed to take “bridge” courses at either the graduate or undergraduate level to prepare for the formal certificate courses.

Once admitted to a certificate program, a student will be given three years to complete the program, so long as he/she maintains at least a “B” average in the courses taken.

Contact Information

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