

**REVISED UNDERGRADUATE CERTIFICATE IN EXPLOSIVES TECHNOLOGY
OFFERED BY THE DEPARTMENT OF MINING & NUCLEAR ENGINEERING**

Intended Audience: Main Campus Students Distance (online) Students Both

JUSTIFICATION (Reason for revision):

This revision is being requested to update to the new course numbering system and a few minor changes due to added courses giving more options and to accommodate a request from the ATF. (Course listing is not included as all numbers should be updated automatically). All changes are in red.

CURRENT UGCT PROGRAM:

Explosives Technology Certificate (Undergraduate)

ADMISSION:

This certificate program is designed to provide formalized education in the area of Explosives. Students will be exposed to the theoretical and practical approaches of explosives technology. Students will learn analysis and design of explosive-related systems and both natural and built structure effects. The Explosives Technology Certificate Program is open to all persons holding a High School Diploma who have a mathematics background through trigonometry (Missouri S&T Math 6 or equivalent) and a minimum of 12-months of post-H.S. professional employment or college experience.

The applicant must also pass a background check.

CONTRIBUTING FACULTY:

Currently the explosives program has two full time S&T faculty members assisted by one retired professor, an adjunct assistant professor and two industry adjunct instructors. The program is expanding its available offerings and is seeking collaboration with explosives faculty at other universities throughout the world. Our current faculty includes:

Dr. Paul Worsey
Director of Explosives Education
Professor of Explosives/Mining Engineering

Dr Jason Baird
Associate Professor of Explosives/Mining Engineering

Dr. Richard Bullock
Professor Emeritus Mining Engineering

Dr. Gillian Worsey
Adjunct Assistant Professor of Explosives Engineering

Mr. Gregory Shapiro

President Steel Blasting
Adjunct lecturer

Mr. Matt Sutcliffe
President Premier Pyrotechnics
Adjunct lecturer

CURRICULUM:

Once admitted to the program, the student must take four designated 3 credit hour courses for a total of 12 credit hours as given below. In order to receive an Undergraduate Certificate, the student must have an average cumulative grade of 2.0 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 eligible to apply to the B.S. Mining Engineering program. The certificate credits taken by students admitted to the B.S. program may be eligible to count toward their bachelor's degrees depending on the degree requirements. Prerequisite courses outside of those in this certificate program may be waived at the discretion of the administrative co-coordinators for persons that are not regular Missouri S&T mining engineering students. Once admitted to the certificate a student will be given three years to complete the certificate so long as he/she maintains a 2.0 GPA in the courses taken.

The following courses constitute the undergraduate certificate in Explosives Technology:

- Two Required Courses:
 - Exp Eng 307-Principles of Explosives Engineering
 - Exp Eng 350-Blasting Design and Technology

- Choose any two courses from the list below:
 - Exp Eng 305/Min Eng 305 Explosives Handling And Safety
 - Exp Eng 309/Min Eng 309 Commercial Pyrotechnics Operations
 - Exp Eng 313/Min Eng 313 Stage Pyrotechnics and Special Effects
 - Exp Eng 323 Pyrotechnic Show Design
 - Min Eng 383 Tunneling & Underground Construction Techniques

Other courses approved by the explosives engineering faculty may be substituted for any of the above listed courses on a case-by-case basis.

PROPOSED UGCT PROGRAM:

Explosives Technology Certificate (Undergraduate)

ADMISSION:

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S&T Math 6 or equivalent) and a minimum of 12-months of post-H.S. professional employment or college experience.

The applicant must also pass a background check.

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President Steel Blasting
Adjunct lecturer

Mr. Matt Sutcliffe
President Premier Pyrotechnics
Adjunct lecturer

CURRICULUM:

Once admitted to the program, the student must take four designated 3 credit hour courses for a total of 12 credit hours as given below. In order to receive an Undergraduate Certificate, the student must have an average cumulative grade of 2.0 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 eligible to apply to the B.S. Mining Engineering program. The certificate credits taken by students admitted to the B.S. program may be eligible to count toward their bachelor's degrees depending on the degree requirements. Prerequisite courses outside of those in this certificate program may be waived at the discretion of the administrative co-coordinators for persons that are not regular Missouri S&T mining engineering students. Once admitted to the certificate a student will be given three years to complete the certificate so long as he/she maintains a 2.0 GPA in the courses taken.

The following courses constitute the undergraduate certificate in Explosives Technology:

- One Required Course:
 - Exp Eng 5612-Principles of Explosives Engineering
- Choose any three courses from the list below:
 - Exp Eng 5001 Pyrotechnic Show Design
 - Exp Eng 5112 Explosives Handling And Safety
 - Exp Eng 5512 Commercial Pyrotechnics Operations
 - Exp Eng 5513 Stage Pyrotechnics and Special Effects
 - Exp Eng 5514 Fireworks Manufacturing
 - Exp Eng 5622 Blasting Design and Technology
 - Exp Eng 5713 Demolition of Buildings and Structures
 - Min Eng 4922/5922 Tunneling & Underground Construction Techniques

Other courses approved by the explosives engineering faculty may be substituted for any of the above listed courses on a case-by-case basis. **Students with a GPA of 3.0 in the certificate program may take advanced graduate level (6000) explosives classes as electives.**