

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

**Intended Audience: \_\_Main Campus Students \_\_Distance (online) Students X 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. (Course listing is not included as all numbers should be updated automatically). All changes are in red.

**CURRENT UGCT PROGRAM:**

**Explosives Engineering Certificate (Undergraduate)**

This 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. The Explosives Engineering Certificate Program is open to all persons enrolled in an engineering or approved physical science program that have achieved sophomore status in that program. The applicant must also pass a background check. Once admitted to the program, the student must take four designated 3 credit hour explosives 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 S&T Mining Engineering B.S. 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 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 Engineering:

- 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
  - Exp Eng 351/Min Eng 351 Demolition of Buildings and Structures
  - Min Eng 383 Tunneling & Underground Construction Techniques

- 3 hrs of Min Eng 390-Research and Exp Eng 300/Min Eng 300-Special Problems may be substituted at the discretion of the program coordinators

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 postgraduate explosives classes as electives.

### **PROPOSED UGCT PROGRAM:**

#### **Explosives Engineering Certificate (Undergraduate)**

This 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. The Explosives Engineering Certificate Program is open to all persons enrolled in an engineering or approved physical science program that have achieved sophomore status in that program. The applicant must also pass a background check. Once admitted to the program, the student must take four designated 3 credit hour explosives 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 S&T Mining Engineering B.S. 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 Engineering:

- **Required Courses:**
  - **Exp Eng 5612** Principles of Explosives Engineering
  - **Exp Eng 5622** Blasting Design and Technology
- **Choose any two 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 5713** Demolition of Buildings and Structures
  - **Min Eng 4922/5922** Tunneling & Underground Construction Techniques
  - **Any 6000 level explosives course or other explosives-related course with the approval of the student's advisor and instructor permission.**

Students with a GPA of 3.0 in the certificate program may take **advanced graduate level (6000)** explosives classes as electives.

Attachment to : Revised Undergraduate Certificate in Explosives Technology and Revised Undergraduate Certificate in Explosives Engineering

Both certificates are offered to distance students. Courses in these certificate programs that are offered to distance students are the following:

Principles of Explosives Engineering  
Blasting Design and Technology  
Demolition of Buildings and Structures  
Tunneling & Underground Construction Techniques

In addition, the following two courses require travel to Missouri for weekend labs but have been taken by distance students:

Commercial Pyrotechnics Operations  
Fireworks Manufacturing