

Special Explosives Applications Class – EXGN 6001
Course Syllabus
Summer 2018

Times and Location:

June 25 - 29, 2018, Monday – Friday 8:00- 5:00, Lecture Classroom TBD, Explosives Research Laboratory in Idaho Springs, Colorado

Instructor:

Dr. Vilem Petr: BB 213, (303) 273-3222, vpetr@mines.edu

Teaching Assistant:

TBD

Lab Coordinator:

Ray Johnson: BB 121B, (303) 272 3080, rjohns@mines.edu

Course Website:

<http://axpro.mines.edu/LongDistance.html>

<http://www.blackboard.mines.edu>

Course Objectives

This week-long course offers students who desire to continue their education the opportunity to examine and develop a fundamental knowledge of special explosives applications and concepts. Specifically, this course will cover the topics of avalanche control, oil and gas applications, wire line companies, explosive welding, forming, and hardening, and explosive synthesis. Students will gain a greater understanding of the various industry applications and explosives science through multi-disciplinary lectures, as well as laboratory demonstrations, industry expert guest lectures, and hands-on practical exercises.

Grading

This course is assessed on the traditional grading scale.

Students will demonstrate their knowledge through the completion of homework, lab reports, quizzes, and a final exam.

Homework and quizzes will be given after each topic covered.

Lab reports will be completed after each session of practical training at the ERL.

> 93	A
90-93	A-
87-89	B+
84-85	B

80-83	B-
77-79	C+
74-76	C
70-73	C-
60-69	D
< 60	F

Attendance

Regular class attendance and the timely completion of assignments is required in order to pass this course.

You are required to attend 90% of the lectures given; penalties will be given for additional lectures missed.

ERL Policies

Safety Training attendance is MANDATORY. In order to participate in any of the practical exercises of this course, you must satisfactorily pass the Safety Quiz and sign the Student Waiver Form.

The following dress code is MANDATORY when working in the Explosives Research Laboratory in Idaho Springs. Violators of any ERL rule will be immediately expelled and not allowed to re-enter for the duration of the course:

- Jeans with no holes, tears, etc.
- Steel-toed shoes
- Shirt long enough to cover your back when you kneel down
- Appropriate additional clothing at the site due to weather conditions

We will provide all other required safety equipment.

You must have approval from the instructor before taking videos or pictures of any activities at the test site.

Please let your instructor know if you have any medical conditions that are relevant to the activities of this course.

Due to safety requirements, there is a maximum class capacity of 20 students.

Semester Calendar

Day/Time	Topic
Monday/8:30	Introduction and Welcome
Monday/9:00	Safety Training

Monday/10:00	Introduction to Explosives Welding and Forming
Monday/10:30	Parametric Calculations
Monday/11:00	Industry Applications
Monday/12:00	Lunch/Break
Monday/15:00	Gurney Equation
Tuesday/8:00	Safety Quiz
Tuesday/9:00	Explosives Welding Demonstration
Tuesday/10:30	Explosives Forming Demonstration
Tuesday/12:00	Lunch/Break
Tuesday/12:30	Explosives Engraving Practical Exercise
Tuesday/15:00	Introduction into Shock Wave Physics
Tuesday/17:00	Shock Wave Calculations Group Project
Wednesday/8:30	Introduction to Oil Well Explosives
Wednesday/9:00	Perforators
Wednesday/9:30	Casing Cutters
Wednesday/10:00	Detonators
Wednesday/10:30	Wire Line Operators
Wednesday/11:00	Detonating Cord
Wednesday/11:30	Explosive Properties for Oil and Gas
Wednesday/12:00	Lunch/Break
Wednesday/15:00	Small Scale Laboratory Detonation
Thursday/8:30	Introduction into Avalanche Control
Thursday/9:00	Avalauncher Gas Guns
Thursday/9:30	Avalauncher Projectiles
Thursday/10:00	Hand Charges
Thursday/10:30	Case Charges
Thursday/11:00	Gas Explosions
Thursday/12:00	Lunch and Travel
Thursday/14:00	Avalauncher Demonstration
Thursday/15:00	Case Charge Practical Exercise
Thursday/15:30	Snow Crater Analysis
Friday/8:30	Shock Wave Physics Practical Exercise
Friday/11:30	Barbecue
Friday/13:00	Final Exam
Friday/15:00	Certificates

