

Course Information

Min 445: Accidents, Emergency and safety Managements in Mines

3+ 0 Credit hours, Pre-Req: Min 302, concurrently with Min 454, or Permission of the Instructor.

Alternate Fall, M, W & F, 8:00 AM – 9:00 AM

2013 Catalog Description: Accident statistics, Accident investigation & prevention, Major provisions of current laws, Rule-making procedures, Mine fires and explosions, causes and prevention, Loss control principles and methods, Emergency evacuation, Emergency response & Emergency preparedness, Safety management systems and behavioral science applications.

Course Instructors: Sukumar Bandopadhyay, PhD., P.E., Professor of Mining Engineering, 311 Duckering Building, College of Engineering & Mines, Ph: 904-474-6876, Email: sbandopadhyay@alaska.edu

Office Hours: TBA
Location: TBA

Text book/Course Materials: Instructor's notes will be made available to the students.

Suggested Reading Materials: Various mining accident reports in the public domain, MSHA publications on mining safety and accidents, CFR 30, part 75, subpart- D

Course Objectives: In today's mining industry, all levels of management understand the moral obligation, as well as economic justification, for running operations in a manner that safeguards the health and safety of their workers. These factors, coupled with the enforcement liabilities attached to the ever increasing maze of state and federal regulations, requires mining engineers to be experienced in health and safety issues. The mining industry continues to seek better and more effective means by which to improve safety and health conditions in mining. The objective of this course is to provide opportunities to enhance students' understanding and appreciation of the mining safety imperative.

Student Learning Outcomes: Fundamental knowledge Goals

1.1: Understanding of moral obligation and economic justification of mine safety programs

1.2: Effective Means of improving health and safety in mines

Student Learning Outcomes: Competency & Ability Goals

- 2.1 Health and Safety Issues in Mining**
- 2.2 Recognition of unsafe behavior**
- 2.3: Accident analysis and investigation methods**
- 2.4: Federal Regulations, Enforcements and rule making Procedures**

Instructional Method: In class lectures, & case studies

Course Calendar:

Mine Accidents

August 30, & September 2, 2013	Accidents Statistics in Coal and Metal Mines
September 4, and September 6, 2013	Analysis of Incidents and Accidents, reportable accidents, & safety Auditing
September 9, and September 11, 2013	Near Misses, and accident mitigations
September 13, and September 15, 2013	Accident Investigations
September 16 & September 18 2013:	Training, Education & Culture of Safety

Spontaneous Combustions of Coal and Metal Mine Fires

September 20 & September 23, 2013:	Mechanism of spontaneous combustion of coal
September 25 & September 27, 2013:	Spontaneous Fire Risk and Preventive Measures
September 30, 2013:	Detection and assessment of heating in a mine
October 2, 2013:	Combating of Coal Mine Fires

Explosion in Coal and Metal Mines

October 2 & October 4, 2013:	Explosion in Coal Mines, Causes & Prevention
October 7 & October 9, 2013:	Sulphide Dust Explosions in Underground Mines
October 11 and October 14, 2013:	Variables influencing sulphide dust explosion, physics and energy equations
October 16, & October 18, 2013	Secondary Dust Explosion, Causes and Prevention & control
October 21, 23, & October 25, 2013:	Control of Suphide dust explosions – case studies
October 28, 2013:	Safety Management of Underground Sulphide Dust

October 30, 2013: **Movies: You are my Sunshine, Upper Big Branch Explosion and Famington # 9**

November 1, 2013, **Sago Mine Explosion - Analysis**

November 4, 2013: **Mid-Term Examination**

Mine Emergency and Emergency Preparedness

November 6, 2013: Mine Ventilation Risks

November 8, 2013: Mine Plans, Evacuation and Escape ways
November 11, 2013: Emergency Response Plan

November 13 and November 18, 2013: Emergency Exercises

November 20, and November 22, 2013: Self-contained Self Rescuers
November 25, 2013: Thanksgiving Holiday

November 27, 2013 Emergency communication & Miner Tracking

November 29, 2013: Refuse Alternatives

December 2, 2013: Emergency crisis Planning

December 4, 2013 Escape & Evacuations

December 6, 2013: Safety Management in Mine Ventilation

December 9, 2013: Implementation of Ventilation Management Plan

December 10—15 Final Examination

Computer Use: (1) Sponcom: A Computer Program for the Prediction of the Spontaneous Combustion Potential of an Underground Coal Mine

(2) MFIRE: A computer Program for Analyzing Mine Fire

Course Policies: (1): No-make examination (In case of illness, make-up exam may be granted if a Doctor's note is submitted). No early exams will be given.

(2) Plagiarism/Academic Integrity: As stated in UAF policies & Regulations

(3) Attendance is required for a passing grade.

- (4) All home works, and project works need to be submitted electronically (MS word file). **No hand written submission of the homework or project work will be accepted.**
- (5) **Late submission of any homework or project work will be checked but will not count towards the final grade for the class.**

DISABILITIES SERVICES

The Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials. The instructor will work with the Office of Disabilities Services (208 WHIT, 474-5655) to provide reasonable accommodation to students with disabilities. Contact: Mary Matthews, Disability Services, fnmkm@uaf.edu, x5655.

Course Evaluation: The students will be evaluated based on absolute scores. Two in-class examinations (Mid-term & final) will be 60% of the total grade, class-home works will consist of 15% of the grade, class project will consist of 20% of the grade, and class-participation & attendance will count for 5% of the grade.

The class project will involve “root cause analysis” of an accident. A written project report will be required. It will be graded based on the (a) approach, (b) identification of “root causes” for the accident, (c) completeness, and (d) presentation of the report.

A student who receives 90% or above will get an “A” grade, 85-90% will get a “B” grade, 80-85% will count for a B⁻, etc.