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Submit original with signatures + 1 copy + electronic copy to UAF Governance.

#### TRIAL COURSE OR NEW COURSE PROPOSAL

SUBMITTED BY:									
Department	Mining & Geol Engineering	ogical		College/S ool	Sch	College of Engineering & Mines			
Prepared by	Sukumar Band	opadhyay		Phone			907-47	74-7388	
Email Contact	sbandopadhyay	alaska.ed/	u	Faculty Contact		Sukun	nar Bandop	adhyay	
1. ACTION L	DESIRED (CHECK ONE):	Trial	Cours	e		New Course	xx		
2. COURSE 1	DENTIFICATION:	Dept	MI	N Cour: #	se	445/645 NG	o. of redits	3	
Justify u division number of	apper/lower status & credits:	MIN 302 as pre-	req & Mir	1 454 concurrent	tly				
3. PROPOSED	COURSE TITLE:		Acciden	ts, Emergency	& Saf	ety Management	t in Mines		
<b>4. CROSS LI</b> YES/NO (Requires signatu	<b>NO</b> departments	If [ and de	yes, Dept: ans involved	d. Ad	Course #	d of form f	for such		
<b>5. <i>STACKED</i>?</b> YES/NO		YES	If D	yes, MIN Dept.		Course #	645		
6. FREQUENC	Y OF OFFERING:	Alternate Fa	11						
		(Every	y or Alt	ternate) Fal	ll, Sp: Warra	ring, Summer – nts	- or As Dem	and	
7. SEMESTER approved)	& YEAR OF FIRS	T OFFERING	<b>3</b> (if (	Fall 2013	3				
<b>8.</b> COURSE FO NOTE: Course compressed in council. Furt core review o <i>COURSE FOR</i> (check one	PRMAT: hours may not be nto fewer than si thermore, any cor committee. MAT:	compressed x weeks must e course cor	into fe t be app mpressed	ewer than th broved by th d to less th 3	nree da ne coli nan si: 	ays per credit lege or school x weeks must 1	t. Any cour l's curricu be approved X 6 week full s	se lum by the ts to emester	
OTHER FORM (specify)	AT								
Mode of delivery Lectures (specify lecture, field trips, labs, etc)									
9. CONTACT	HOURS PER WEEK	3	LECTU	JRE	0 LA	AB	PRACT	ICUM	
Note: # of c of lab in a minutes of p the syllabus number of c	credits are based science course=1 practicum=1 credi s. See <u>http://www</u> redits.	on contact credit. 16 t. 2400-800 .uaf.edu/uat	] nours hours. 600 minu 00 minut fgov/fac	8/Weeks [ 800 minute ites in non- tes of inter culty/cd/cre	nc es of -scienc cnship edits.l	burs /week _ lecture=1 cred ce lab=1 cred =1 credit. Th html for more	dit. 2400 it. 2400-4 his must ma informatio	/week minutes 800 tch with n on	
OTHER HOURS type)	(specify								

## 10. COMPLETE CATALOG DESCRIPTION including dept., number, title and credits (50 words or less, if possible):

MIN 445: Accidents, Emergency & Safety Management in Mines: 3+0 Credits: 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. Pre-req: MIN 302, and MIN 454 Concurrently, or permission of instructor.

SEE NEXT PAGE FOR MIN F645 course description.

11. COURSE CLASSIFICATIONS: (undergraduate courses only. Use approved criteria fou on Page 10 & 17 of the manual. If justification is needed, attach on separate sheet.)	Ind
H = Humanities N = Natural Science S = Social Sciences	
Will this course be used to fulfill a requirement for <b>YES XX NO</b>	
IF YES, check which core requirements it could be used to fulfill: 0 = Oral Intensive, Format 6 W = Writing Intensive, Format 7 Format 8 Format 8	
12. COURSE REPEATABILITY: Is this course repeatable for credit?	
Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).	
How many times may the course be repeated for credit?	
If the course can be repeated with variable credit, what is the maximum number of credit hours that may be earned for this course?	C
13. GRADING SYSTEM: LETTER XX PASS/FAIL:	
14. PREREQUISITES MIN 302. or equivalent. Min 454 concurrently, or permission of the instructor	
These will be required before the student is allowed to enroll in the course.	
<b>RECOMMENDED</b> Internship in coal or metal mines or prior mining industry experience	
Classes, etc. that student is strongly encouraged to complete prior to this course	•
15. SPECIAL RESTRICTIONS, CONDITIONS	
16. PROPOSED COURSE FEES <b>§</b> Has a memo been submitted through your dean to the Provost & VCAS for fee approval? Yes/No	
17. <b>PREVIOUS HISTORY</b> Has the course been offered as special topics or trial course NO previously? Yes/No	

10.	COMPLETE	CATALOG	DESCRIPTION	including	dept.,	number,	title	and	credits	(50	words
	or less,	if poss	ible):								

MIN 645: Accidents, Emergency & Safety Management in Mines: 3+0 Credits: 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. Prerequisites: MIN F302 or equivalent, graduate standing, or

permission of instructor.

11.	<b>COURSE CLASSIFICATIONS:</b> (undergraduate courses only. Use approved criteria found on Page 10 & 17 of the manual. If justification is needed, attach on separate sheet.)
	H = Humanities Science Science Sciences
	Will this course be used to fulfill a requirement for <b>YES XX NO</b>
	IF YES, check which core requirements it could be used to fulfill: 0 = Oral Intensive, Format 6 W = Writing Intensive, Format 7 Format 8 Format 8
12.	COURSE REPEATABILITY:
	Is this course repeatable YES XX NO
	Justification: Indicate why the course can
	be repeated (for example, the course follows a different theme each time).
	How many times may the course be repeated for credit? TIMES
	If the course can be repeated with variable credit, what is the
	maximum number of credit hours that may be earned for this course? CREDIT
	s
13.	GRADING SYSTEM:
	LETTER XX PASS/FAIL:
RES	TRICTIONS ON ENROLLMENT (if any) TOJJ
14.	<b>PREREQUISITES</b> MIN 302 or equivalent, graduate standing or permission of the instructor
	These will be <i>required</i> before the student is allowed to enroll in the course.
1	<b>RECOMMENDED</b> Internship in coal or metal mines or prior mining industry experience
Cl	asses, etc. that student is strongly encouraged to complete prior to this course.
15. COI	. SPECIAL RESTRICTIONS, NDITIONS
10	
10	Has a memo been submitted through your dean to the Provost & VCAS for fee approval? Yes/No
17	
17.	Has the course been offered as special topics or trial course NO previously? Yes/No
	If yes, give semester, year, course #, etc.:

#### 18. ESTIMATED IMPACT

WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC. None

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#### 19. LIBRARY COLLECTIONS

Have you contacted the library collection development officer (ffklj@uaf.edu, 474-6695) with regard to the adequacy of library/media collections, equipment, and services available for the proposed course? If so, give date of contact and resolution. If not, explain why not.

No	xx

Adequate resources are available in the Department Library

#### 20. IMPACTS ON PROGRAMS/DEPTS

What programs/departments will be affected by this proposed action? Include information on the Programs/Departments contacted (e.g., email, memo) None

#### 21. POSITIVE AND NEGATIVE IMPACTS

Yes

Please specify **positive and negative** impacts on other courses, programs and departments resulting from the proposed action.

None

#### JUSTIFICATION FOR ACTION REQUESTED

The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. Use as much space as needed to fully justify the proposed course.

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. To address this development, it is incumbent upon mining engineering programs to prepare students to accept and professionally prepared for these duties.

Safety professionals and progressive mining companies know that safety and health issues encompass a host of topics beyond mere regulatory compliance. In acknowledging this fact, one can see mine safety and health management emerging as a distinct discipline within the general ambit of mining engineering. The mining industry continues to seek better and more effective means by which to improve safety and health conditions in mining. This course will provide opportunities to enhance students' understanding and appreciation of the mining safety imperative.

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hay?	Date 9/26/12
Signature, Cha, Signature, Cha	
Program/Department of:	
Chuen- Aen Tin	Date 10/03/2012
Signature, Chair, College/School Curriculu	
Council for:	
( And )	Date 16/3/12
Signature Dean, College/School CEar	,
of: U	
	Date

Signature of Provost (if applicable)

Offerings above the level of approved programs must be approved in advance by the Provost.

ALL	SIGNATURES	MUST	BE	OBTAINED	PRIOR	то	SUBMISSION	то	THE	GOVERNANCE	OFFICE	
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Date

Signature, Chair, UAF Faculty Senate Curriculum Review Committee

### ADDITIONAL SIGNATURES: (If required)

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	Date
Signature, Chair, Program/Department of:	
	Date
Signature, Chair, College/School C Council for:	Curriculu
	Date
Signature, Dean, College/School of:	

### Course Information Min 445: Accidents, Emergency and safety Managements in Mines

### 3+ 0 Credit hours, Pre-Req: Min 302, concurrently 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: <u>sbandopadhyay@alaska.edu</u>

# 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:**

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### **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,, 202	13 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:	<b>Mid-Term Examination</b>

### **Mine Emergency and Emergency Preparedness**

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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 Excercises
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
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.

**Course Evaluation**: The students will be evaluated based on absolute scores. Two inclass 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.

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<sup>-</sup>, etc.

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Disabilities Services: Will follow UAF rules & regulations.

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### Course Information Min 645: Accidents, Emergency and Safety Managements in Mines

3+ 0 Credit hours, Pre-Req: Min 302, or equivalent, graduate standing or Permission of the Instructor. Alternate Fall, M, W & F, 8:00 AM – 9:00 AM Location : TBD

**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: <u>sbandopadhyay@alaska.edu</u> Office hours: TBA

Required textbook: Instructor's Class Notes & PP Slides Recommended reading: UBB Accident Report, Sunshine Mine Fire Report, CFR 30 Part 75, Sub part -D Required supplies: if any: None

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: After completing this course, students will be able to: (1) understand and appreciate the mining safety imperative; (2) identify major health and safety hazards in mining; (3), conduct accident analysis and accident prevention; (4) improve safety and health conditions in mines; and (5) use a systematic approach to mine safety and health management,; (6) respond to mine emergency and develop mine emergency plans.

Instructional methods:

The course is primarily lecture based, although in-class assignments will be required biweekly

### **Course Calendar:**

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### **Mine Accidents**

August 30, & September 2, 2013Accidents Statistics in Coal and MetalMinesSeptember 4, and September 6, 2013Analysis of incidents and accidents,<br/>Reportable accidents, & Safety auditingSeptember 9, and September 11, 2013Near Misses, and Accident mitigations<br/>Accident InvestigationsSeptember 13, and September 15,, 2013Accident Investigations<br/>Training, Education & Culture of Safety

### **Spontaneous Combustions of Coal and Metal Mine Fires**

September 20 & September 23, 2013:	Mechanism of spontaneous combustion of coal
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	Measures
September 30, 2013:	Detection and assessment of heating in a
October 2 2013	Compating of Coal Mine Fires

### **Explosion in Coal and Metal Mines**

Explosion in Coal Mines, Causes &
Sulphide Dust Explosions in Underground Mines
Variables influencing sulphide dust explosion, physics and energy equations
Secondary Dust Explosion, Causes and Prevention & control
Control of Suphide dust explosions – case studies
Safety Management of Underground Sulphide Dust
Movies: You are my Sunshine, Upper Big Branch Explosion and Famington # 9
Sago Mine Explosion - Analysis
Mid-Term Examination

### **Mine Emergency and Emergency Preparedness**

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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:	Mine Emergency Excercises
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

Required Term Papers:	<ul> <li>(1) A forensic Analysis of a selected mine explosion</li> <li>(2) Spontaneous combustion potential of a selected</li> <li>Alaskan coal deposit (Computer Analysis)</li> </ul>
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- **Course Policies**: (1): No make-up 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**

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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 inclass examinations (mid-term & final) will be 50% of the total grade, class projects (term-papers) will consist of the other 50% of the grade. 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<sup>-</sup>, etc.

The projects (term-papers) will graded based on the research quality, research content, and completeness, and it is expected that quality of the term papers will be such that these can be published in a conference or peer-reviewed journals.

#### Disabilities Services: Will follow UAF rules & regulations.