

MGEN 6380: Critical Risk Management: Prevention Mining Injuries and Fatalities (1 credit)

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Office Hours: By appointment

Zoom/IM/Canvas Conference Office Hours: By appointment

Course Description

Critical Risk Management: Prevention of Mining Injuries and Fatalities is an intensive two-week graduate-level course designed to equip students with the knowledge and skills necessary to identify and manage critical risks in mining operations. The course focuses on proactive risk assessment, mitigation strategies, and safety management systems to prevent injuries and fatalities. Through interactive discussions, case studies, and practical exercises, students will develop a comprehensive understanding of the key risk factors in mining and learn effective strategies for preventing accidents and promoting a safety-focused culture in the mining industry.

Course Outcomes

1. To develop a thorough understanding of critical risk factors leading to mining injuries and fatalities.
2. To familiarize students with proactive risk assessment methodologies in the mining industry.
3. To provide students with knowledge and skills to develop and implement effective risk mitigation strategies.
4. To explore safety management systems and their role in preventing accidents and promoting a safety culture.
5. To enhance students' abilities to analyze and address critical risks in mining operations.
6. To encourage critical thinking and problem-solving skills through case studies and practical exercises.

Grading Policy

Students will be evaluated through assignments, quizzes, exams and class project. Student professionalism demonstrated through attendance and respect for others will also be reflected in evaluation. Grading will follow the following scheme:

Homework 20%

Term project 10%

Reading quizzes 20%

Mid-term exam 20%

Final exam 20%

Professionalism 10%

Subject to change per instructor's discretion. Grading will follow the University of Utah grading scale of:

0%- 59.5%	60% - 64.5%	65%- 69.5%	70% - 74.5%	75%- 79.5%	80%- 84.5%	85%- 89.5%	90%- 94.5%	95%- 100
E	D-	D+	C-	C+	B-	B+	A-	A

Course Schedule

Week 1: Introduction to Critical Risk Management

- Course overview and objectives
- Importance of critical risk management in mining operations
- Regulatory requirements and industry standards

Week 2: Proactive Risk Assessment

- Principles of proactive risk assessment
- Hazard identification techniques and tools
- Risk evaluation and prioritization methods

Week 3: Developing Risk Mitigation Strategies

- Risk control hierarchy and principles
- Engineering controls and design considerations
- Administrative controls and work procedures
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Week 4: Safety Management Systems

- Introduction to safety management systems (SMS)
- Elements of an effective SMS
- Implementation and auditing of SMS in mining operations

Week 5: Human Factors in Risk Management

- Understanding human error and its impact on safety
- Human factors engineering in mining
- Training, communication, and behavior-based safety

Week 6: Case Studies in Mining Safety

- Analysis of real-life mining accidents and fatalities
- Root cause analysis and lessons learned
- Group discussions and presentations

Week 7: Emergency Preparedness and Response

- Emergency planning and response procedures
- Incident investigation and lessons learned

- Evacuation strategies and emergency communication
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Week 8: Safety Culture and Leadership

- Creating a safety-focused culture in mining organizations
- Leadership and accountability for safety
- Engaging employees and fostering a positive safety climate

Week 9: Continuous Improvement in Risk Management

- Evaluation and monitoring of risk controls
- Safety performance metrics and indicators
- Process safety management and continuous improvement initiatives

Week 10: Implementing Risk Management Programs

- Developing and implementing risk management programs
- Integration of risk management into mining operations
- Evaluation and auditing of risk management systems

Finals Week:

Note: This syllabus is meant to serve as an outline and guide for our course. Please note that I may modify it with reasonable notice to you. I may also modify the Course Schedule to accommodate the needs of our class. Any changes will be announced in class and posted on Canvas under Announcements.

University Policies

1. ***The Americans with Disabilities Act.*** The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability & Access, 162 Olpin Union Building, (801) 581-5020. CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability & Access.
 - ***If in-class attendance is a necessary component of the course for pedagogical reasons (e.g., laboratories, studios, or artistic training), state it explicitly.***

Use this standard language: “Given the nature of this course, attendance is required and adjustments cannot be granted to allow non-attendance. However, if you need to seek an ADA accommodation to request an exception to this attendance policy due to a disability, please contact the Center for Disability and Access (CDA). CDA will work with us to determine what, if any, ADA accommodations are

reasonable and appropriate

2. ***University Safety Statement.*** The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit <https://safeu.utah.edu>
3. ***Addressing Sexual Misconduct.*** Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).
4. ***Academic Misconduct Statement.*** It is expected that students adhere to University of Utah policies regarding academic honesty, including but not limited to refraining from cheating, plagiarizing, misrepresenting one's work, and/or inappropriately collaborating. This includes the use of generative artificial intelligence (AI) tools without citation, documentation, or authorization. Students are expected to adhere to the prescribed professional and ethical standards of the profession/discipline for which they are preparing. Any student who engages in academic dishonesty or who violates the professional and ethical standards for their profession/discipline may be subject to academic sanctions as per the University of Utah's Student Code: <https://regulations.utah.edu/academics/6-410.php>