MNGE 455
MINE ENVIRONMENT, HEALTH, AND SAFETY ENGINEERING

Spring Semester 2017

Instructor: Dr. Joseph C. Hirschi  Office: ENGR E10
Email: jhirschi@siu.edu  Phone: 618-453-7923
Office Hours: Monday and Wednesday  8:00-11:00am
Tuesday and Thursday  8:00-9:30am

Class Schedule: MWF at 12:00-12:50pm in ENGR A29

Course Objectives:
1. Familiarize students with the major environmental, health, and safety laws that govern mining activities in the United States and internationally.
2. Familiarize students with the Mine Safety and Health Administration (MSHA), Office of Surface Mining (OSM), and other regulatory agencies that oversee mining activities as well as the many regulations they promulgate for mines.
3. Teach students the ethical responsibilities of a mining engineer including the obligation to safeguard the health and safety of the mine workforce, the surrounding community, and the local environment.
4. Teach students proven techniques for safely managing and directing a workforce.

Texts: Relevant technical papers will be provided by instructor; otherwise, there is no formal text.

References:
1. SME Mining Engineering Handbook

Grading:
1. Homework – 6 assignments @ 100 points per assignment ➔ 30% of grade.
2. Quizzes – 6 quizzes @ 100 points per quiz ➔ 30% of grade.
3. Exams – 2 midterms @ 200 points per midterm ➔ 20% of grade,
   – 1 final exam @ 400 points ➔ 20% of grade.
4. Extra Credit available at Instructor’s discretion for related Saluki Miner activities.
5. Grading scale is shown in the following table. A grading curve will not be used.

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<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<td>≥90%</td>
<td>A</td>
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<td>80-89%</td>
<td>B</td>
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<td>70-79%</td>
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<td>60-69%</td>
<td>D</td>
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<tr>
<td>&lt;60%</td>
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Course Topics:

Section 1: Mining and Mineral Rights


Section 2: Environmental Regulations in Mining

National Environmental Policy Act; Clean Water Act; Clean Air Act; Title 5 Permits; Surface Mining Control and Reclamation Act (SMCRA); Resource Conservation and Recovery Act (RCRA); Superfund; Toxic Substances and Control Act; Methods for Dust Control; Passive Enclosures; Wet Suppression; Dry Collection; Storm Water Permitting; Storm Water Protection and Structural Control Practices

Section 3: Engineering Ethics

Ethics in Engineering; Dealing with Clients and Employers; Dealing with Suppliers; Professional Engineering Registration; Working with Other Engineers; Dealing with the Public; Competitive Bidding; Employee Rights; Ethical Case Studies

Section 4: Mine Health and Safety Regulations and Mine Disaster Case Studies


Section 5: Other Mine Health and Safety Topics and MSHA Requirements

Mine Evacuations; SCSRs; Rescue Chambers; Disaster Response; Registration and Reporting; MSHA Guidance Sections: Part 48 and Part 46 Miner Training; Roof and Ground Control Regulations and Practices; Noise Regulations and Safety; HAZCOM; Mine Ventilation Basics and Regulations for Underground Mines; Diesel Particulate Standards

Section 6: Health and Safety Management (Managing and Directing a Workforce)

The Need for Health and Safety Management; Health and Safety Management Failures in Mining; Effective Means for Integrating a Health and Safety Program in the Workplace and Developing Buy-in; CORE Safety; A Model for Health and Safety Management; Measuring Health and Safety Performance (Incident Rates); Measuring Health and Safety with Control Charts

References Cited Above:

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<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics</th>
<th>Graded Work</th>
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<tbody>
<tr>
<td>1</td>
<td>1/18</td>
<td>Introductions, Course Overview, Begin Section 1 Section 1: Mining and Mineral Rights</td>
<td>Homework #1 Assigned 1/20</td>
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<td>2</td>
<td>1/23-27</td>
<td>Section 1: Mining and Mineral Rights</td>
<td>Homework #1 Due 1/27</td>
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<td>3</td>
<td>1/30</td>
<td>Review of Section 1 Section 2: Environmental Regulations in Mining</td>
<td>Quiz #1 on 1/30</td>
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<td>2/1, 3</td>
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<td>Homework #2 Assigned 2/3</td>
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<td>4</td>
<td>2/6-10</td>
<td>Section 2: Environmental Regulations in Mining</td>
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<td>2/13, 15</td>
<td>Section 2: Environmental Regulations in Mining Review of Section 2</td>
<td>Quiz #2 Due 2/15</td>
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<td>2/17</td>
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<td>Midterm Exam #1 on 2/24</td>
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<td>2/20-22</td>
<td>SME Annual Meeting – No Classes</td>
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<td>Midterm Exam #1 on 2/24</td>
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<td>2/27-3/3</td>
<td>Section 3: Engineering Ethics</td>
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<td>8</td>
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<td>Section 3: Engineering Ethics Review of Section 3</td>
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<td>3/8, 10</td>
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<td>Homework #3 Due 3/8</td>
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<td>Quiz #3 on 3/10</td>
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<td>9</td>
<td>3/13-17</td>
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<td>3/20-24</td>
<td>Section 4: Mine Health and Safety Regulations and Mine Disaster Case Studies</td>
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<td>Section 4: Mine Health and Safety Regulations and Mine Disaster Case Studies</td>
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<td>Review of Section 4 Section 5: Other Mine Health and Safety Topics and MSHA Requirements</td>
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<td>Review of Section 5 Midterm Exam #2 Section 6: Health and Safety Management</td>
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<td>Section 6: Health and Safety Management (Managing and Directing a Workforce)</td>
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<td>Quiz #6 on 5/3</td>
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<td>5/5</td>
<td>Semester Review</td>
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<td>17</td>
<td>5/8</td>
<td>Final Examination 12:30 to 2:30am</td>
<td>Final Exam on 5/8</td>
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IMPORTANT DATES *
Semester Class Begins:..................01/17/2017
Last day to add full-term course (without Dean’s signature): 01/22/2017
Last day to withdraw from the University with a full refund: 01/27/2017
Last day to drop a full-term course for a credit/refund:........01/29/2017
Deadline to apply to graduate at the end of this term:...........04/2/2017
Final examinations:......................05/8–5/12/2017
Commencement:...........................05/13/2017

Note: For more detailed information on the above deadlines, please visit: http://Registrar.siu.edu/calendar. For add/drop dates that apply to shorter-than-full-term courses, please look at the Schedules of Classes search results at http://Registrar.siu.edu/schedclass/index.php

SPRING SEMESTER HOLIDAYS
Martin Luther King Jr.’s Birthday Holiday 01/16/2017
Spring Break 3/13–3/19/2017

WITHDRAWAL POLICY – Undergraduate only
Students who officially register for a session must officially withdraw from that registration in a timely manner to avoid being charged as well as receiving a failing grade for those classes. An official withdrawal must be initiated by the student, or on behalf of the student through the academic unit, and be processed by the Registrar’s office. For the proper procedures to follow when dropping courses and when withdrawing from SIU visit: http://Registrar.siu.edu/students/drop withdrawal.php

INCOMPLETE POLICY – Undergraduate only
An INC grade may be assigned when, for reasons beyond their control, students engaged in pass/credit courses are unable to complete all class assignments for the course. An INC grade must be changed to a completed grade within a full semester (undergraduates), and one full year (graduate students), from the close of the term in which the course was taken or withdrawn, whichever occurs first. Should the student fail to complete the remaining course requirements within the time period designated, the incomplete will be converted to a grade of F and such grade will be computed in the student’s grade point average. For more information visit: http://Registrar.siu.edu/grades/incomplete.php

REPEAT POLICY
An undergraduate student may, for the purpose of raising a grade, enroll in a course for credit more than once. For students receiving a letter grade of A, B, C, D, or F, the course repetition must occur at Southern Illinois University Carbondale. Effective for courses taken Summer 2013 or later, only the most recent (last) grade will be calculated in the overall GPA and count toward hours earned. This policy will be applied to all transferable credit in that only the last grade will be used to calculate grade point average. Only courses taken at the same institution are considered repeats under this policy. See full policy at http://Registrar.siu.edu/students/repeateclasses.php

GRADUATE POLICIES
Graduate policies often vary from undergraduate policies. To view the applicable policies for graduate students, please refer to the graduate catalog at http://GradSchool.siu.edu/about-us/graduate-catalog/

DISABILITY POLICY
Disability Support Services provides the required academic and programmatic support services to students with permanent and temporary disabilities. DSS provides centralized coordination and referral services. To utilize DSS services, students must contact DSS to open cases. The process involves review of student-supplied documentation, and completion of Disability Accommodation Agreements. For more information: http://disabilityservices.siu.edu/

PLAGIARISM
Student Conduct Code: http://srx.siu.edu/student-conduct-code/

SAFETY AWARENESS FACTS AND EDUCATION
Title IX makes it clear that violence and harassment based on sex and gender 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, etc. If you or someone you know has been harassed or assaulted, you can find the appropriate resources here: http://safe.siu.edu/

SALUKI CARES
The purpose of Saluki Cares is to develop, facilitate and coordinate a university-wide program of care and support for students in any type of distress—physical, emotional, financial, or personal. By working closely with faculty, staff, students and their families, SIU will continue to display a culture of care and demonstrate to our students and their families that they are an important part of the community. For more information on Saluki Cares: call (618) 453-1492, email Salukicares@siu.edu, or visit http://salukicares.siu.edu/

SIU’S EARLY WARNING INTERVENTION PROGRAM (EWIP)
Students enrolled in courses participating in SIU’s Early Warning Intervention Program might be contacted by University staff during a semester. More information can be found at the Core Curriculum’s Overview webpage: http://corecurriculum.siu.edu/program-overview/

EMERGENCY PROCEDURES
We ask that you become familiar with Emergency Preparedness @ SIU: Emergency response information is available on posters in buildings on campus, on the Emergency Preparedness @ SIU website, and through text and email alerts. To register for alerts visit: http://emergency.siu.edu/

STUDENT MULTICULTURAL RESOURCES CENTER
The Student Multicultural Resource Center serves as a catalyst for inclusion, diversity and innovation. As the Center continues its work, we are here to ensure that you think, grow, and succeed. We encourage you to stop by the Center, located in Grinnell Commons, to see the resources available and discover ways you can get involved on the campus. Visit us at http://inclusivexcellence.siu.edu/

LEARNING AND SUPPORT SERVICES
Help is within reach. Learning support services offers free tutoring on campus and math labs. To find more information please visit the Center for Learning and Support Services website: Tutoring: http://tutoring.siu.edu/
WRITING CENTER
The Writing Center offers free tutoring services to all SIU students and faculty. To find a Center or Schedule an appointment please visit: http://Write.siu.edu/

AFFIRMATIVE ACTION & EQUAL OPPORTUNITY
Our office’s main focus is to ensure that the university complies with federal and state equity policies and handles reporting and investigating of discrimination cases. For more information visit: http://diversity.siu.edu/

MILITARY COMMUNITY
There are complexities of being a member of the military community and also a student. Drill schedules, calls to active duty, complications with GI Bill disbursement, and other unforeseen military and veteran related developments can complicate academic life. If you are a member of the military community and need in accommodations please visit Veterans Services at http://Veterans.siu.edu/

Additional Resources:
ADVISEMENT: http://advisement.siu.edu/
SIU ONLINE: https://online.siu.edu/
SALUKI SOLUTION FINDER: http://solutionfinder.siu.edu/
MORRIS LIBRARY HOURS: http://morrisonlibguides.siu.edu/hours