Course: MinE 713 – Theory of Roof Bolting

Semester: Spring 2008

Course Format and Credit hours: 3 hr lecture,
3 credit-hour

Prerequisites: MinE 611 Advanced Ground Control or Consent

Instructor: Dr. Syd S. Peng
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Schedule: Monday, Wednesday, Friday 4:00 p.m.- 5 p.m.

Location: Room 152 Mineral Resources Bldg.

Office Hours: Monday, Wednesday, Friday, 2:00 p.m. – 3:00 p.m.

Course objectives: To review theories of roof bolting developed during the past 5 decades and examine their failure and success stories; to review the latest developments and trends of future research.

Expected Learning Outcomes: Upon successful completion of this course:
1. Students will know the historical development of theories of roof bolting.
2. Students will know the strengths and weaknesses of various existing theories of roof bolting.
3. Students will know the latest developments of theories of roof bolting.
4. Students will know the trends and be able to set the direction for future research in roof bolting.
5. Students will know the design and practical issues in use of roof bolting.

Required Text: None. Selected papers covered in the class will be distributed.

Grading Paper review reports (10 sets) 100%

Grading Assignment: 80-100 A
70-80 B
60-70 C
< 60 F

Paper Review Reports: A total of 23 papers, grouped into 10 sub-topical areas, will be distributed to the class. Each student is required to review the assigned group of papers in advance. In the class, the instructor will lecture each individual paper in detail, followed by class discussion. Afterward each student is required to submit a report for each sub-topical group of papers with the following format:

1. Summary of the papers
2. Strengths and weaknesses of each paper
3. Recommended Areas for further discussion and research
Social Justice Statement:

"West Virginia University committed to social justice. I concur with that commitment and expect to maintain a positive learning environment based upon open communication, mutual respect, and nondiscrimination. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color or national origin. Any suggestions as to how to further such a positive and open environment in this class will be appreciated and given serious consideration."

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangement with Disability Service (293-6700).

Days of Special Concern:

WVU recognizes the diversity of its students and the needs of those who wish to be absent from class to participate in Days of Special Concern, which are listed in the Schedule of Courses. Students should notify their instructors by the end of the second week of classes or prior to the first Day of Special Concern, whichever is earlier, regarding Day of Special Concern observances that will affect their attendance. Further, students must abide by the attendance policy of their instructors as stated on their syllabi. Faculty will make reasonable accommodation for tests or field trips that a student misses as a result of observing a Day of Special Concern.
Course Schedule:

Week 1  History and current status of roof bolt application in coal mining
Week 2  Types of roof bolts
Week 3 – 4  Review of roof bolting theories – tensioned bolts
Week 4 - 6  Review of roof bolting theories – non-tensioned bolts
Week 7 – 14  lecture and discussion of the following selected papers:

10. A.A. Campoli, and K. Dever, Resin Annulus Size Effects on Rebar Bolt Pull Strength and Resin Loss to Fractured Rock, Proceeding of the 18th International Conference on Ground Control in Mining, West Virginia University, August 1999, pp. 222-231.
12. E. McHugh and S. Signer, Roof Bolt Response to Shear Stress: Laboratory Analysis. Proceeding of the 18th International Conference on Ground Control in Mining, West Virginia University, August 1999, pp. 232-238.
14. J. Stankus, Tensioned Cable Bolts as Primary Bolts. Proceeding of the 20th International Conference on Ground Control in Mining, West Virginia University, August 2001, pp. 252-258.