

CVEN 5768: INTRODUCTION TO ROCK MECHANICS

Spring 2008

Instructor: Bernard Amadei, Professor (ECOT 546),
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Textbook: - *Introduction to Rock Mechanics*, by R.E. Goodman, 1989 (optional)
- Lecture notes will also be available on the course web site

Topics to be covered during the semester:

- Introduction
- Physical properties of rocks
- Stresses and strains - a review
- Thermal and hydraulic properties of rocks
- Deformability properties of rocks and rock masses
- Applications of theory of elasticity in rock mechanics
- Visco-elasticity and rocks
- Strength properties of rocks and rock masses
- Rock discontinuities
- Hemispherical projection methods
- *In situ* stresses
- Rock slope engineering
- Underground excavation in rock

Meetings: Wednesday: 9:00-10:00 a.m., Room ECOT 546

Office Hours: M and W. 8:00 - 10:00 a.m. or by appointment

Grading: 20% final exam; 20% mid-term; 30% HW assignments; 30% term project

Course Web Site: <http://ceae.colorado.edu/~amadei/CVEN5768>

Other Reference:

- International Society for Rock Mechanics: www.isrm.net
- *Practical Rock Engineering* by Prof. H. Hoek (free download)
www.rocscience.com/roc/Hoek/Hoeknotes2000.htm
- Rock Mechanics Digital Library: http://armarocks.org/digital_library/
- The Geo-engineer web site: www.geoengineer.org

TERM PROJECTS

Select a major article (or a series of articles) that provides an interesting *case study* and clearly emphasizes the *applied aspect* of rock mechanics in an engineering (civil, mining, petroleum) context. Note that actual case studies on which you have worked in design projects or on internships are good as well as some in-house company publications. On-going projects in the Denver/Boulder area can also be reported. Your instructor must approve the case study by **Wednesday February 13**. This can be an individual project or a group project (no more than 2 people per group).

Prepare a report (one per group) to be given as an oral presentation with illustrations for the class. Each of your colleagues in class should receive a one-page summary handout highlighting the main features of your case studies including the major references. The written report should be typed and should not exceed 10 pages (single space, 12 font) including illustrations (figures, tables, diagrams, sketches, etc). The written reports are due by **Wednesday April 23**.

This assignment will give you the opportunity to explore a real engineering case study, understand it in depth, and present it to your peers. It will count for 30% of your final grade.