

CEE 9577 – Rock Mechanics I - Course Outline

Objectives:

The objectives of the course are for the students to develop an understanding of the engineering properties of rocks, geotechnical investigations and reporting geological and engineering rock classifications, rock failure theories, in-situ stresses in rock, and the fundamental concepts and principles of rock mechanics. This course is the pre-requisite for Rock Mechanics II which covers the applications of rock mechanics principles in the design of foundations, slopes and underground openings in rock.

Topics:

The topics covered in the course are as follows:

- Overview of rock engineering problems.
- Geotechnical investigation for rock engineering project and reporting
- Geological classification of rocks, engineering classifications and index properties of intact rocks.
- Characterization of rock discontinuities and their fundamental properties.
- Classification of rock masses.
- In-situ stresses in rocks and methods of stress measurement and interpretations. Particular reference will be given to the engineering problems relating to in-situ stress conditions in Southern Ontario
- Laboratory testing for the measurement of strength and deformation behaviour of intact rocks and their interpretation to determine the strength and deformation parameters under uniaxial compression, triaxial compression and uniaxial tension.
- Failure theories of rock including the Griffith criterion and Hoek and Brown criterion
- Strength and deformation behaviour of rock masses.
- The phenomenon and mechanism of time-dependent deformation of rocks and the measurement and interpretation of time-dependent deformation rock properties.

The topics covered will be augmented by case histories as required to illustrate the applications of the basic principles and concepts to rock engineering projects.

Prerequisites:

Completion of BEng. in civil engineering or equivalent

Note: It is the **student's responsibility** to ensure that all Prerequisite conditions are met or that special permission to waive these requirements has been granted by the Faculty.

Contact Hours:

2 lecture hrs/wk

Text:

Selected course notes will be available in class

Other References:

Appropriate references will be given in class

Assignments:

2 assignments will be assigned during the term.

Examination:

A 3-hour open book examination is held during the examination period on all work covered during the course.

Evaluation:

The final grade is based on the following:

Assignments	30%
Final Examination	70%

Instructors:

Dr. C. Yuen, P.Eng., Spencer Engineering Building Room _____

Dr. K.Y. Lo, Professor Emeritus, P.Eng., FEIC, Spencer Engineering Building Room _____

Graduate Affairs Assistant: _____, Spencer Engineering Building Room 3010
Email: civilgrad@uwo.ca

Use of English:

In accordance with Senate and Faculty Policy, students may be penalized up to 10% of the marks on all assignments, tests, and examinations for the improper use of English. Additionally, poorly written work with the exception of the final examination may be returned without grading. If

resubmission of the work is permitted, it may be graded with marks deducted for poor English and/or late submission.

Attendance:

Any student, who, in the opinion of the instructor, is absent too frequently from class or laboratory periods in any course, will be reported to the Dean (after due warning has been given). On the recommendation of the Department concerned, and with the permission of the Dean, the student will be debarred from taking the regular examination in the course.

Cheating:

University policy states that cheating is a scholastic offence. The commission of a scholastic offence is attended by academic penalties, which might include expulsion from the program. If you are caught cheating, there will be no second warning (see Scholastic Offence Policy in the Western Academic Calendar).

Plagiarism:

Students must write their essays and assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offence Policy in the Western Academic Calendar).

Conduct:

Students are expected to arrive at lectures on time, and to conduct themselves during class in a professional and respectful manner that is not disruptive to others.

Sickness and Other Problems:

Students should immediately consult with the instructor or Department Chair if they have any problems that could affect their performance in the course. Where appropriate, the problems should be documented. The student should seek advice from the Instructor or Department Chair regarding how best to deal with the problem. Failure to notify the Instructor or Department Chair immediately (or as soon as possible thereafter) will have a negative effect on any appeal.

Notice:

Students are responsible for regularly checking their email and notices posted outside the Civil Engineering and Environmental Engineering Department Office