

# Syllabus CE 453 Earthwork Design

---

## Department of Civil & Environmental Engineering, West Virginia University

Faculty: Dr. John Quaranta, Ph.D., P.E., Associate Professor  
Instructor: ESB 645, Phone: (304) 293-9942; email at: [jdquaranta@mail.wvu.edu](mailto:jdquaranta@mail.wvu.edu)  
Office Hours: Tuesday and Thursday: 12:30 – 2 pm; also by appointment  
Pre-requisites: CE 351 Introductory Soil Mechanics

Text Book: Das, B.M. (2006) *Principles of Geotechnical Engineering, 7<sup>th</sup> or 8<sup>th</sup> Editions*, Thomson Publishing (limited chapters)

Additional Reference: Duncan, J.M. and Wright, S.G., *Soil Strength and Slope Stability*, 2005 Wiley

Schedule: Tuesday & Thursdays, 11:00 am to 12:15 pm, Room 401 ESB Duration: Aug 18 to Dec 14, 2014

### Social justice statement:

West Virginia University is committed to social justice. I concur with that commitment and expect to foster a nurturing learning environment based upon open communication, mutual respect, and non-discrimination. 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 arrangements with Disability Services (293-6700).

Scope: The course will introduce the use of soil mechanics principles to the analysis, design, and construction of earth slope structures. An introduction to slope stability analysis and landslides; earth reinforcement, and ground improvement techniques will be presented.

Topics: Overview of Slopes & Stability Concepts  
Review of geotechnical engineering topics  
Soil Strength  
Infinite Slope Stability Analysis  
Mass Wasting  
Finite Slope Stability Analysis  
Rotational Slope Stability Analysis  
Slope Stabilization & Repair

Attendance: You are expected to attend all classes. You are expected to come to class on time. If you have specific problems or emergency with attendance notify me prior to class, unless the emergency is such that this is not possible. In the event of an emergency, notify me as soon as possible; especially prior to any scheduled examinations.

Assignments: Homework:  
Homework will not be assigned during the semester.  
Selected study problems and reading topics will be provided to you after completion of the topic(s) covered.  
A solution key will be posted outside the soils laboratory (B20).  
You are encouraged to do these problems and to read the selected text sections.

### Design Project(s), Contemporary Issues, & Modern Engineering Tools:

Design project(s) will be assigned during the semester based on selected topics covered.  
The assignment(s) will be individually performed and will be graded based on criteria provided. This assignment will include ABET evaluation criteria requiring the student to apply basic engineering knowledge from other courses including but not limited to: dynamics, statics, strength of materials, environmental engineering, and soil mechanics.

Contemporary Issues assignments will involve the student's learning of landslides and rockfall events occurring and the consequences these events have had. The students will investigate landslide accidents reported in the media and discuss the events and impacts on the public and infrastructure.

Modern Engineering Tools will address the use of computer software analysis tools used in practical engineering problems. The students will be introduced to various computer software tools and the methods of analysis.

Grading: Final grades will be based on 90%, 80%, 70%... corresponding to A, B, C.  
The instructor reserves the right to curve up.

Quizzes & Design Project(s)	30%
Exam #1	35%
Exam #2	35%
TOTAL	100%

Quizzes: may be used to assess student preparedness. The quizzes will be based on lecture notes and selected study problems. If you are not in class on the day of a quiz, it is assumed you are not prepared. Quizzes are not eligible to be made-up if missed.

Design Project(s): These assignments will be graded individually and will be based on field type assessments of new designs or evaluations of existing sites for repairs. Grading will be based on an analytical and practical solution.

Examinations: there will be two examinations paced with the topics covered during the semester. There will be no comprehensive examination for this course. The examinations will challenge the student's understanding of the topics covered by using:  
1) Method problems which include numerical analysis problem type, and  
2) Conceptual based problems challenging the student's understanding of theoretical concepts and practical knowledge.

#### Make-up Exams and Leaving examinations:

Make-up exams must be performed within seven days of the original date; the instructor reserves the right to increase the exam difficulty. If Exam I make-up date is exceeded then the instructor will require that the student apply the Exam II grade for the full 70% of the exam points.

If you need to be excused during an exam you will not be permitted to return and resume the examination. Your exam shall be submitted to the instructor or proctor and graded as completed.

In order to continue the exam you will be required to submit a written request with explanations for your departure, and if acceptable, then a make-up exam will be provided and the instructor reserves the right to increase the exam difficulty or apply the Exam II grade for the full 70% of the exam points.

#### General Comment on Work Submission:

Students are expected to submit calculations / graphs / sketches which are reasonably neat, complete yet concise; orderly and well organized in format. Sketches should be used to illustrate and summarize the design. Calculations and sketches should be presented in pencil on either engineering quadrille paper or plain white paper measuring: 8-1/2" x 11". Multiple pages must be stapled. As a general guideline of the quality of the work ask yourself the following questions:

1) Does this work, upon initial inspection and review appear to be that of a professional or that of a disorganized high school student?

2) Upon more detailed inspection, could another engineer follow / review/ verify your work or do you feel confident that you could interpret this work if you looked at it in six weeks or six years?

Grading: For work submitted that does not meet the guidelines noted above, point deductions will be applied, or the assignment will be returned without a grade.

General Comment on Disruptions:

Talking: please respect class members.

Questions: Encouraged during class. Homework related questions will be addressed during office hours or by Graduate Teaching Assistant.

Electronic Equipment: Only hand held calculators will be permitted for use during exams. Cell phone or I-phone type devices which can communicate with other electronic devices are not permitted as calculators. No cell phones, lap tops, e-book readers are permitted during exams.

Silence phones during class.

Food is disruptive and is not permitted during class.

Academic Conduct:

West Virginia University Academic Integrity: The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the Student Conduct Code at

[http://studentlife.wvu.edu/office\\_of\\_student\\_conduct/student\\_conduct\\_code](http://studentlife.wvu.edu/office_of_student_conduct/student_conduct_code).

Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see me before the assignment is due to discuss the matter.

ABET Student Outcomes:

Expected Learning Outcomes - Upon successful completion of this course students will:

Goals by topic	Outcome
Apply knowledge of math, science, and engineering	A
Design civil engineering projects and components of projects	C
Identify, formulate, and solve civil engineering problems	E
Knowledge of contemporary issues	J
Use techniques, skills, and modern engineering tools	K