

## CE 201 CE COMPUTATIONAL TECHNIQUES

Spring Quarter 2005

MW 10:10-11:00 Bentley Hall 140

F 10:10-11:00 Stocker 305 and 308

*2004-2005 Catalog Data:* Prereq: MATH 263A OR CONCURRENT. Introduction to methods of problems solving, use of computers for calculations, applications or problem solving to civil engineering. 3 lec.

*Textbook:* *Introduction to Matlab 7 for Engineers.* Palm, W. J. III. 2005. McGraw Hill Higher Education (New York, NY).

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### *Topics:*

1. Presentation and Analysis of Data
2. Programming
3. Design Process
4. Use of Excel
5. Use of Matlab

### *Course Objectives:*

The course objectives describe the skills and knowledge that you should obtain from this course. These objectives are part of the undergraduate teaching objectives of the Civil Engineering Department. The objectives for this course are:

- 1e) You will be provided with background and skills in design.
  - *You will gain an understanding of the design process.*
- 2a) You will be provided with a learning environment that fosters functioning on multidisciplinary teams.
  - *Homeworks, in class assignments, and a project will be completed in groups of three or four students.*
- 2c) You will be provided with a learning environment that fosters effective oral and written communication
  - *Each homework group will complete a quarter long project that will be graded based on a written report.*
- 4) You will be exposed to state-of-the-art and state-of-the-practice facilities/equipment.
  - *You will learn to effectively use Matlab, a state-of-the-art computational tool, to solve engineering problems.*

### *Grading:*

15%	Group Homework (probably 9)
60%	Quizzes (probably 9)
25%	Group Project

*Policies:*

- **Computer lab.** Every Friday we will be holding class in the computer lab in Stocker 305 and 308. You will need an account to log into these computers. All engineers should already have one. Be sure to bring your login name and password. Contact Bryan Jordan (Stocker 264A, 3-0960, jordanb@ohio.edu) to set up an account if you need to. Bring a disk or flash drive to lab because you can't save to the hard drive.
- **Homework.** Homework must be completed in teams of three or four which will be determined on the first day of class. Only turn in one solution per group with the names of each participating member of the group. If a student's name does not appear on the solution, he/she will receive no credit for the work.
- **Quizzes.** Every Wednesday you will be given homework due the following Monday. On Friday in class you will work in the computer lab on the homework in your group, and I will answer questions. On Monday you will have a 20 minute quiz on the topic.
- **Project.** During the quarter you will write a groundwater modeling program and design a contamination clean-up system. More details will be given throughout the quarter.
- **Grading.** Some partial credit will be given for the proper solution method. Answers with incorrect units, with incorrect significant figures, that are illegible, or without the necessary calculation steps are incorrect.
- **Late homework.** Unless I have accepted a valid excuse in advance, homework grades will be reduced 10% for each calendar day late.
- **Working in teams.** Working at a computer on the homework is the best way to learn this material. It is highly recommended that all problems are attempted individually before meeting with your group. Do not rely on your group to carry you. If you do not actively work on the homeworks, you will do poorly on the quizzes. Homework that has been copied from a solution or another group will receive a zero.
- **Individual effort assessment.** At the end of the quarter, team members will be asked to confidentially evaluate themselves and other members of the team. A student's individual grade for homework and the project will be raised or lowered from the group grade based on those evaluations.
- **Help.** I encourage students to consult one another, come to office hours, and email me to discuss academic or personal questions about the course policies or content.

*Tentative Schedule:*

<u>Lecture/Lab</u>	<u>Topic</u>	<u>Reading Assignment</u>
March 28, 30, April 1	Excel: intro, formatting, syntax, function	
April 4, 6, 8	Excel: referencing, filling, graphs, regression,	
April 11, 13, 15	Excel: logic, IF, nesting, importing	
April 18, 20, 22	Matlab: intro, array and matrix operations	Ch. 1,2
April 25, 27, 29	Matlab: files, input, output	Ch. 3
May 2, 4, 6	Matlab: programming, loops	Ch. 4
May 9, 11, 13	Matlab: programming style, debugging	
May 16, 18, 20	Matlab: linear algebra	Ch. 6
May 23, 25, 27	Matlab: plotting/regression	Ch. 5
May 30	NO CLASS – Memorial Day	
June 1, 3	Matlab: symbolic math	Ch. 9
June 8	FINAL PROJECT DUE (no exam)	