



Jack A. Puleo, Ph.D.
Pronounced (poo-lay-o)
Assistant Professor

Department of Civil and Environmental Engineering
Center for Applied Coastal Research
University of Delaware
Newark, DE 19716

Phone office: 302-831-2440
Email: jpuleo@udel.edu

Web page with information and assignments
<http://www.coastal.udel.edu/faculty/jpuleo/Jack-Puleo.html>
and click on Courses

CIEG 675 MATLAB FOR ENGINEERING ANALYSIS (1 Credit)
Fall 2007

Class: DuPont Hall 140 W 0900-1000

Instructor: Dr. Jack Puleo
Ocean Engineering Lab 203
831-2440 jpuleo@udel.edu
Office Hours: T,TH 0900-1000 Or just about any other time door is open

Required Text: None

Course Description: The course is based on the description and usage of the commercial Matrix Laboratory (Matlab) software for analyzing multi-dimensional data sets and formulating numerical models of engineering processes.

Goals: The goal of this course is to better prepare University of Delaware Civil and Environmental graduate students in the use of Matlab for performing engineering data analysis, modeling and visualization. Upon completing the course, the students will have learned numerous topics including:

- 1) Variable creation
- 2) Saving, reading and loading data
- 3) Matrix manipulation and operations
- 4) The use of built-in functions
- 5) Creating m-files and personal functions
- 6) The use of for, while and if loops
- 7) Plotting and visualization techniques
- 8) Image analysis and manipulation
- 9) Movie generation
- 10) Simple modeling techniques

Layout: The course will consist of weekly lectures including in class demonstrations and exercises. Students will be given weekly assignments that reinforce the material covered. This forces the students to take what is presented in class and develop their own Matlab programs to solve problems. Each graduate student will be required to do a short project related to his/her own research area that will assist in their thesis work and present it to the class. Projects for undergraduate students will be less difficult and will be decided upon between the individual student and professor.

Grading: Grades will be based on the weekly homework assignments and projects. No exams will be given. All initial programs contain bugs that are worked out through

considerable effort. The professor does not feel that giving an exam on programming-type material is particularly appropriate or beneficial.

Example Grading Structure:

Homework	75 %
Project	25 %

SYLLABUS (ROUGH)

Week 1	Windows, helpful commands, variables
Week 2	Math operators and built-in functions
Week 3	Simple plotting techniques
Week 4	Making m-files and functions
Week 5	Relational operators and loops
Week 6	Saving, writing and reading data
Week 7	Random numbers and basic statistics
Week 8	Curve fitting and interpolation
Week 9	Strings and structures
Week 10	Fancier plots
Week 11	Handles
Week 12	Movies
Week 13	Modeling
Week 14	Modeling
Week 15	Project presentations

COURSE POLICIES

- a. Environment: The course will consist of an energetic, non-threatening environment where students will be called upon frequently. Questions and discussion are encouraged. That is how you learn.
- b. Attendance: You will do poorly in this class if you do not attend. Make every effort to be there.
- c. Neatness: Anything you turn in is a reflection of you. Please make sure it is neat. Sloppy work will be returned ungraded. The forward thinking student realizes that these course notes and homework should be organized and retained for future use.
- d. Study Groups: “Safety in Numbers”. I encourage the use of study groups for homework and exams. I do not mind if you do homework assignments together as long as each person turns in their own work. Carbon copies of an assignment will garner suspicion.