

## COURSE DESCRIPTION

**Department and Course Number:** COMP 1200 (Matlab)

**Course Title:** Introduction to Computing for Engineers and Scientists

**Total Credits:** 2

**Required:** No

**Elective:** No. Service course to other engineering majors

**Prerequisites:** None

**Class meetings per week:** 2 hours

**Lab meetings per week:** 0 hours

**Course Coordinator:** Jacqueline Hundley, Lecturer

**Date Prepared:** July 15, 2011

### **Current Catalog Description:**

Computer programming in a high-level language, with emphasis on the use of the computer as a tool for engineering or science.

### **Textbooks:**

Moore, Holly. 2009. *Matlab for Engineers*. Prentice Hall. ISBN 978-0-13-604422-2.

### **References:**

None.

### **Course Objectives:**

1. Given a software requirements specification and a software design, the student will successfully translate that design into source code using MATLAB and run the program
2. Given source code written in MATLAB, the student will correctly answer questions about the source code's purpose and about the syntax, semantics, and run-time results of the code

### **Prerequisites by Topic:**

None

### **Topics Covered:** (specify number of hours on each)

1. Computers and computing fundamentals (1 hour)
2. MATLAB program structure, 5 programming steps, and commenting code (4 hours)
3. MATLAB environment (1 hour)
4. The basics of MATLAB - variables, arithmetic operations, math functions, and input/output (6 hours)
5. Functions (hours 2)
6. Beginning decision making and loops (5 hours)
7. Vectors and matrices (3 hours)
8. Reading and writing to files (3 hours)
9. Cell and Structures arrays (3 hours)
10. Exams (2 hours)

### **Laboratory Projects:**

Note: Skills introduced in an assignment are repeated in subsequent assignments.

The midterm exam is given between assignments 5 and 6.

1. MATLAB environment, command window and diary file (1.5 weeks)
2. Interactive I/O and computation (1 week)
3. Input validation and selection (1 week)
4. More repetition, selection, and output formatting (1 week)
5. Data file I/O (1 week)
6. User defined functions (1.5 weeks)
7. Vectors (1 week)
8. Parallel arrays (vectors), columnar output with header and summary footer (1 week)
9. Spreadsheet input and matrices (1 week)
10. Spreadsheet I/O and plotting (1.5 weeks)

### **Oral and Written Communications:**

Students are taught how to document source code. This includes file preface blocks, function preface blocks, and inline comments.

### **Social and Ethical Issues:**

None.

### **Theoretical Content:**

Students are introduced to the software engineering principles of abstraction, stepwise refinement, and reuse

### **Problem Analysis and Solution Design:**

Students are introduced software development

### **Grading Scheme:**

Grading Scale:

A	[1000, 900]
B	[800, 900)
C	[700, 800)
D	[600, 700)
F	[0, 600)

Programming Assignments : 500 pts

Exams:

Mid-term exam	200 pts
Final exam	300 pts

To pass this course at least 60% credit (300 pts) is required on the programming assignments.