Engineering 7: Introduction to computer programming for scientists and engineers

Summer Session 2015

6/08/2015 – 08/14/2015

MW 9:30-11:00 1165 ETCH

W 11:00-1230 1165 ETCH

TUTH 9:00-12:00 1171 ETCH

Instructor : George Anwar

GSI: Harshil Goel

Rubens Salsa

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Course Description:

• Elements of procedural and object-oriented programming. Induction, iteration, and recursion.

•Real functions and floating-point computations for engineering analysis.

•Introduction to data structures.

•Representative examples are drawn from mathematics, science, and engineering.

•The course uses the MATLAB programming language

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Course Format:
Regular Semester Session
2 hours of lecture (Required)
2 hour of discussion (Optional)
4 hours of laboratory per week (Strongly Recommended)

Summer Semester Session
3 hours of lecture (Required)
1.5 hour of discussion (Optional)
6 hours of laboratory per week (Strongly Recommended)

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TOPICS COVERED

- Course Introduction
- Matlab Basics. Matlab Arrays, Vectors, Matrices. Control Structures.
- Functions and writing MATLAB. Data Structures and Classes.
- Systems of Linear Equations.
- Least-Squares.
- Approximation by polynomials.
- Internal representation of numbers.
- Numerical Root.
- Numerical Integration. Numerical Differentiation.
- Numerical Solution of ODEs.
- Linear Recursion and Tree Recursion.
- Sorting and Searching.

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Grading:

Your course grade will be determined by lab assignments, the midterm exam, and the final exam, according to the following weights:

Lab Assignments: 50%

Midterm Exam: 20%

Final Exam: 30% (August 12 at 9:30 am - 12:30 pm)