FUNDAMENTAL COMPUTER SCIENCES

SPRING 2012
• Instructor : (Asst. Prof.) Dr. Arif KARAKAŞ

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• Office hours : Monday -- 3:00 - 4:00 p.m.
  Wednesday -- 5:00 - 6:00 p.m.

• http://www.yarbis.yildiz.edu.tr/akarakas
Required Textbook:

Course Description:

Intended for engineering students who want a comprehensive introduction to fundamental programming concepts using a block-structured language (MATLAB).

General problem-solving techniques, including the concept of step-wise refinement applied to the development of algorithms. Programming style, structure, documentation, and testing.
Course Objectives:

Upon completion of course, students should have learned how to construct computer program flow diagrams, implement programs using MATLAB and apply those skills towards the numerical solution of engineering problems. Specifically:

- Understand basic foundations of computer programming
- Be able to do simple and complex calculation using Matlab
- Have a basic understanding of how engineers use computers to numerically solve programs
- Understand basic algorithms for (1) numerical integration, (2) numerical differentiation, (2) curve fitting, (3) solution of simultaneous linear equations and (4) numerical solution of ordinary differential equations
- Have a reasonably good knowledge of the MATLAB programming environment
Expected Course Outcomes:

After the completion of this course, students are expected to:

- Be reasonably proficient at writing computer programs using MATLAB
- Be able to formulate computer algorithms and implement those algorithms in MATLAB to solve engineering problems.
- Be able to document code
- Be able to decipher MATLAB code written by others
- Be able to graphically present the output of computer programs in a well thought out manner
Grading Policy:

In-term Exams (2): 20 pt each

Homework and Quiz: 20 pt

Final exam: 40 pt

Less than 40 pt ➔ D or F

There will be no exception to this policy.
Homework Policy:

✓ You will receive a zero for homework turned in after the due date, end of class.

✓ When a homework assignment involves programming, you will need to supply me with electronic copy of any .m files. (e-mail address for homeworks will given later)

✓ Copying on exams will result in a score of 0 for everyone involved, including the person supplying the information.

✓ Late submission of homeworks and projects are not accepted and there will be no make-up for missed in-class quizzes.
Attendance Policy:

- Class attendance is MANDATORY.

- Regular and punctual (15 minutes late at most) attendance is necessary for each student to maximize his/her understanding of the material.

- Students who have more than 5 absences (~30%) are subject to being dropped from the course.

- Perfect attendance is expected to succeed in the course.
Topics Covered:

- Introduction to MATLAB,
- Matrices and vectors,
- Plotting using MATLAB,
- MATLAB script and function files,
- Branching statements,
- Loops,
- Solving simultaneous equations,
- Finding roots,
- Interpolation and curve fitting,
- Numerical differentiation
- and numerical integration.
CONTENTS:

1 • ABOUT MATLAB®
2 • MATLAB® ENVIRONMENT
3 • BUILT-IN MATLAB® FUNCTIONS
4 • MANIPULATING MATLAB® MATRICES
5 • PLOTTING
6 • USER-DEFINED FUNCTIONS
7 • USER-CONTROLLED INPUT AND OUTPUT
8 • LOGICAL FUNCTIONS AND SELECTION STRUCTURES
9 • REPETITION STRUCTURES
10 • MATRIX ALGEBRA
11 • OTHER KINDS OF ARRAYS
12 • SYMBOLIC MATHEMATICS
13 • NUMERICAL TECHNIQUES
14 • ADVANCED GRAPHICS
15 • CREATING GRAPHICAL USER INTERFACES
16 • SIMULINK®—A BRIEF INTRODUCTION
**Academic honesty:**

It is your responsibility as a student to adhere to the university and department regulations and policies, as found in various publications, e.g., Academic Policies. All cases of suspected and confirmed cheating/plagiarism will be dealt with as set forth in the university policies of academic dishonesty.

I expect each student to act honestly and to do his or her own work. It is my responsibility and my intention to protect the interests of the honest students. Therefore CHEATING IN ANY FORM WILL NOT BE TOLERATED. Now, I don’t mind if you help each other with understanding the material; in fact, I encourage it. The key point is this: Anything that you turn in—homework, examinations, whatever—with your name on it must be your own work, composed and written by you without looking at others’ work.
Updates:

This syllabus is subject to modification. Any changes will be announced in class and posted on the instructor’s website.

The instructor reserves the right to make changes to this syllabus as necessary.