

# 1 First Meeting

- CENG 375 Numerical Computations Fall 2011
- TUESDAY 9:40-11:30 (T1) Müh. - B1 / B11
- WEDNESDAY 09:40-11:30 (T2) Ortak Alanlar - Z20
- WEDNESDAY 09:40-11:30 (L1) Ortak Alanlar - Bilgisayarlı Lab - 254
- WEDNESDAY 14:40-16:30 (L2) Ortak Alanlar - Bilgisayarlı Lab - 254
- Instructor: Cem Özdoğan Materials Science and Engineering Department, New Campus MHB3 Z-21
- TA: Efe Çiftçi
- WEB page: <http://siber.cankaya.edu.tr/>
- Announcements: Watch this space for the latest updates.

September 28, 2011 13:47 In the first lecture, there will be first meeting and tutorial for Matlab. The lecture notes for the second week will be published soon, see Course Schedule section.

- All the example m-files (for lecturing and hands-on sessions) will be accessible via [link](#).

## 1.1 Lecture Information

- There are two groups for lecturing, you may attend any one of the lecture hours.
- But, “Please” attend your predefined sessions regularly.
- You will be expected to do significant programming assignments, as well as run programs we supply and analyse the output.
- These programs will be written in MATLAB, learning MATLAB is part of the course.
- For programming assignments, other languages will be accepted. (but no programming assistance will be given).

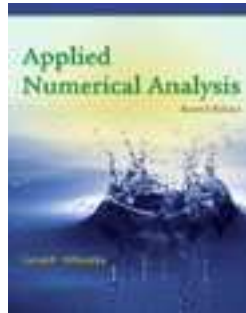
- We require single variable calculus and a knowledge of computer programming. A knowledge of linear algebra and differential equations is also helpful.
- You will have quizzes (10-15 minutes, may be less; but not scheduled as before) for the previous lecture/chapter's subjects.
- There won't be any make-up for these quizzes.
- Important announcements will be posted to the Announcements section of the web page, so please check this page frequently.
- You are responsible for all such announcements, as well as announcements made in lecture.

## 1.2 Overview

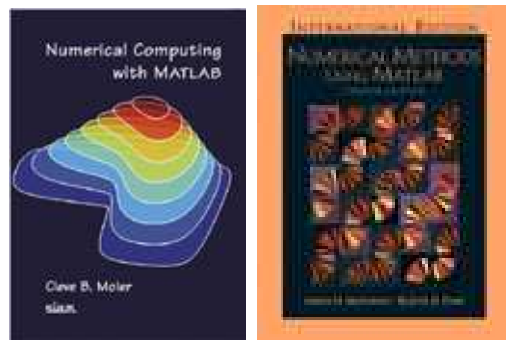
- Ceng 375 is intended to provide an understanding of
  - the numerical algorithms,
  - an ability to organise problems in a form suitable for such numerical solutions,
  - an introduction to common computer methods for their implementation.
- This course is an introduction to numerical analysis.
- Topics include
  - the analysis of error,
  - the use of computers as numerical computing devices,
  - programming in MATLAB,
  - direct and iterative methods for linear equations,
  - non-linear equations,
  - interpolation and function approximation,
  - numerical differentiation and integration.
- Students will be able to recognise common types of numerical problems encountered in engineering practice as described in the class schedule.
- Students will be able to set up a numerical solution for these problems.

### 1.3 Text Book

- Required: Readings will be assigned in Numerical Analysis 7th Edition (International Edition) Curtis Gerald, Patrick Wheatley, ISBN: 032119019X Sep 2003.



- Recommended: Numerical Computing with Matlab Cleve B. Moler, ISBN: 0898715601 January 1, 2004.
- Recommended: Numerical Methods Using Matlab 4th Edition (International Edition) John Mathews, Kurtis Fink, ISBN: 0131911783 Jan 2004.



### 1.4 Grading Criteria & Policies

- There will be a midterm and a final exam, will count 20% and 40% of your grade, respectively.
- Quiz: 15% (worst of the quizzes will be discarded).

- Assignments (or Term Project): 15%.
- Attendance is required and constitutes part of your course grade; 10%. Attendance is not compulsory, but you are responsible for everything said in class.
- I encourage you to ask questions in class. You are supposed to ask questions. Don't guess, ask a question!
- The code you submit must be written completely by you. You can use anything from the textbook/notes.

## 1.5 Numerical Analysis/Computations

1. to solve problems that may not be solvable by hand
  2. to solve problems (that you may have solved before) in a different way
- Many of these simplified examples can be solved analytically (by hand)

$$x^3 - x^2 - 3x + 3 = 0, \text{ with solution } \sqrt{3}$$

- But most of the examples can not be simplified and can not be solved analytically
- Mathematical relationships  $\implies$  simulate some real word situations