

# Math 241: Engineering Mathematics I

Fall Semester 2012-2013

## Textbook:

- Michael D. Greenberg, *Advanced Engineering Mathematics*, (2nd Edition), Prentice Hall, New Jersey, 1998.

## References:

- S. W. Goode, *Differential Equations and Linear Algebra*, Prentice-Hall, 2nd Edition.
- G. Strang *Introduction to Linear Algebra*, Wellesley-Cambridge Press, 2nd Edition.
- S. L. Ross, *Differential Equations*, John Wiley & Sons, 3rd Edition.

## Instructors:

- Yusuf Ziya Ider Sec.01 and Sec.03 (EE 202) (ider@ee.bilkent.edu.tr)
- Vakur B. Ertürk Sec.02 (EE 401) (vakur@ee.bilkent.edu.tr)

## Coordinating Course Assistant:

- Alexander Suhre (EE 304; email: suhre@ee.bilkent.edu.tr) For other teaching assistants please contact to Alexander Suhre.

## Prerequisites by Topics: Calculus I, Calculus II, MATLAB

## Topics:

1. Complex Algebra (1 week) [**Textbook 21.1-21.3.2**].
2. Systems of Linear Equations, Matrices (1 week) [**Textbook 8.1-8.3**].
3. Vector Spaces (3 weeks) [**Textbook 9.1-9.6, 12.2, 12.3, 9.7-9.10**].
4. Matrix Operations, Determinant, Rank, Matrix Inverse (2 weeks) [**Textbook 10.1-10.6**].
5. Eigenvalues, Eigenvectors, Diagonalization, Power of Matrices (1 week) [**Textbook 11.1-11.4**].
6. Quadratic Forms, Approximations and Curve Fitting (1 week) [**Textbook 11.6, Lecture Notes**].
7. Linear Constant Coefficient Difference Equations (1 week) [**Lecture Notes**].
8. The Z-Transform (1 week) [**Lecture Notes**].
9. Linear Constant Coefficient Differential Equations (1 week) [**Textbook 3.4-3.5**].
10. The Laplace Transform (1 week) [**Textbook 5.1-5.4**].
11. System of Linear Differential Equations (1 week) [**Textbook 3.9**].

## Grading Policy (Tentative):

- Midterm Exam1 (Date 03/11/2012 Saturday 16:00–18:30): 30%.
- Midterm Exam2 (Date 08/12/2012 Saturday 16:00–18:30): 30%
- Weekly Homework 5%
- Final Exam: 35%

**Homework Policy:** All homeworks should be done separately. Copying from others' homeworks is strictly forbidden and disciplinary action will be taken when noticed. On the first page of each homework (underneath your name and number) please write the following pledge “**No aid is given, received or observed**”, and sign it.