**EE 242.02 Numerical Methods for EE**

**Instructor:** M. Levent Arslan - arslanle@boun.edu.tr

**Teaching Assistant:**  Umut Mamıkoğlu, Burcu Tepekule, Utku Yavuz

**Class Hrs:** TTTh 782 Fourier Fourier Fourier

**Office Hr:** Thursday 13:00-14:00

**Textbook:**  Scientific Computing: An Introductory Survey, 2nd. Ed., by Michael T. Heath, McGraw Hill.

**Reference books:**

* C How to Program, by Deitel and Deitel, Prentice Hall
* Algorithms in C, by Sedgewick, Addison-Wesley Professional

**Topics:**

* Week 1: Introduction
* Weeks 2-3: Scientific Computing
* Weeks 4-5: System of Linear Equations
* Weeks 6-7: Linear Least Squares
* Weeks 8-9: Nonlinear Equations
* Week10: Spring Break
* Weeks 11-12: Optimization
* Week 13: Interpolation
* Week14: Numerical Integration and Differentiation

**Useful Links:**

* Numbers in computers: <http://kipirvine.com/asm/workbook/floating_tut.htm>
* http://www.seyretogren.com/ders/c-dersleri-egitim-seti.html

**Computer Usage:**

* Projects require C++ programming

**Assessment:**

* Midterm %25
* Final exam %30
* Semester project 1: %15
* Semester project 2: %15
* Semester project 3: %15

**Program objectives**

* **(i)**have a strong background in basic sciences, mathematics and engineering to be successful in their graduate studies;
* **(ii)**have broad skills and solid technical background to be successful in their professional careers;
* **(iii)** have the combination of skills and orientations needed to perform successfully in increasingly more global working environments;
* **(iv)** demonstrate commitment in ethical, societal, and ecological implications of engineering.

**Course Learning Outcomes specific for EE242**

* a. an ability to apply knowledge of linear algebra topics for practical applications.
* e. an ability to identify, formulate, and solve engineering problems. Application of linear algebra methods to real life problems such as image compression is shown.
* k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice. This is assessed in 3 semester projects. Project topics require C/C++ programming skills.
* Course learning outcomes a is related to Program objective (i).
* Course learning outcomes e are related to Program objective (ii).
* Course learning outcome k is related to Program objective (iii).