Hacettepe University
Department of Electrical and Electronics Engineering
ELE 708 Numerical Methods in Electrical Engineering
Spring 2024

Instructor: Dr. Yakup Özkazanç
Lectures: Wednesdays, 09:15 – 12:00 @ Seminar Room
Textbook: *Scientific Computing: An Introductory Survey*, Revised Second Edition, Michael.T.Heath, SIAM, 2018

Course Outline

- Introduction to Scientific Computing
- Systems of Linear Equations
- Linear Least Squares
- Eigenvalue Problems
- Nonlinear Equations
- Optimization
- Interpolation
- Numerical Integration and Differentiation
- Initial Value Problems for ODEs
- Boundary Value Problems for ODEs
- Partial Differential Equations
- Random Number Generation

References

[1] Numerical Methods for Engineers and Scientists, J.D.Hoffman, CRC Press, 2001.
[2] Numerical Methods for Scientists and Engineers, R.Hamming, Dover, 1987.
[3] Numerical Methods for Engineers, S.Chapra, R.Canale, McGraw-Hill, 2005.
[4] Numerical Methods Using Matlab, 4th Eds., J.H.Mathews, Prentice Hall, 2004.
[5] Applied Numerical Methods with MATLAB for Engineers and Scientists, S.Chapra, McGraw-Hill, 2006.

Course Description
This course will be a fast paced review of numerical methods widely used in engineering and science. Emphasis will be on the algorithms for the computational solutions of mathematical problems encountered in electrical and electronics engineering.

Homework
There will be weekly homeworks which may require use of MATLAB and/or other computational tools.

Grading (Tentative)

Homework (50%)
Final exam (50%)