Numerical Analysis for CENG

Instructor

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Office Hours

4 pm – 5 pm, Mondays

Course Overview

Numerical Analysis for Computer Engineers (Teams Code: 5dsex41)

We are going to learn the basics of numerical analysis. This course starts with number representations and methods to solve linear equations. In the second part, the students will learn about the numerical derivatives and integrals. Python is preferred as the programming language for the applications of this course.

Required Text

Numerical Methods in Engineering with Python 3, Cambridge, *Jaan Kiusalaas*

Python Programming and Numerical Methods, Elsevier, *Qingkai Kong – Timmy Slauw – Alexandre M. Bayen*

Numerical Methods for Engineers, McGraw Hill, *Steven C. Chapra – Raymond P. Canale*

Course Materials

- Python 3.x (Anaconda is preferred)
- PC with a Linux distro or a Linux terminal in Windows 10/11.

Course Schedule

Week	Subject	Week	Subject
01	Python Basics	08	System of Linear Equations
02	Calculations and Visualization in Python	09	Bisection Method
03	Binary Representation of Numbers	10	Newton – Raphson Method
04	IEEE 754 Representation of Numbers	11	Introduction to Numerical Integration
05	Precisions in IEEE 754 Representation	12	Gaussian Quadrature Method
06	Introduction to Numerical Derivatives	13	System of Nonlinear Equations
07	Finite Difference Approach	14	Review and Applications of Topics