Information Technology for Engineers

Course Title: Information Technology for Engineers	
Description	This course provides a comprehensive overview of computational tools and techniques for engineering applications. It begins with Numerical Calculations using NumPy, covering array and matrix operations, solving linear equations, and performing numerical differentiation and integration. The course then delves into Data Visualization, using Matplotlib and Seaborn to create 2D and 3D plots, real-time visualizations, and report-ready graphs. Students will explore Data Analysis and Manipulation with pandas, learning to clean, process, and analyze experimental or simulation data with descriptive statistics. Practical applications are emphasized in Solving Engineering Problems with Python, featuring case studies in areas like heat transfer and fluid mechanics, along with solving differential equations and optimization problems using SciPy. The course also introduces SymPy for symbolic mathematics, engineering system simulations, and basic image analysis using OpenCV. Finally, it includes an introduction to Excel VBA Programming for automating and enhancing spreadsheet tasks.
Semester	Spring 2025
Neptun code	GEIAK210-B2a
Instructor	Dr. Nasraldeen Khleel
Credit Hours	4
Attendance Requirement	Students are required to attend at least 60% of the scheduled classes to be eligible for the course signature
Examination	The examination is written, and students will receive some theoretical questions and some practical tasks from the studied material