Premier University
Department of Computer Science and Engineering
B.Sc. Engineering Program in CSE

Engineering Mathematics-I

Course Outline

Semester-Fall 2021

Unit Code: EM-I
Credit Value: 3 credit points.
Pre-requisites: Basic Differentiation rules and H.S.C. level geometry.
Unit Aims: To introduce the concept of Functions and their graphs, the fundamental theory limits. Continuation and differentiation of function by using limiting concept. Different theorem of finite and infinite forms. Partial differentiation, Curvature, Tangent and Normal and their applications. Two dimensional coordinate geometry.
Unit learning Outcomes: On completion of this unit you should be able to demonstrate your achievement of the following learning outcomes:

1. Understanding and applying discipline knowledge, principles and concepts to solve problems.
2. Be able to draw different graphs of function and identify their domain and range.
3. Thinking critically, analytically and creatively.
4. Developing problem solving skills for higher order ordinary and partial differentiation.
5. Developing concept of limits.
6. Improving skills in written communications through assignments.
7. Be able to solve various applied mathematical modeling problems governed by differentiation and 2D geometry.

The Syllabus:
Differential Calculus: Function and its domain, range and graphical representation. Limits, continuity and differentiability of functions, differential coefficients of various types of functions, successive differentiation and Leibnitz's theorem, Rolle's theorem, Mean value theorem, Taylor's theorem in finite and infinite forms, expansion of functions, L'Hospital's rule, partial differentiation and Euler's theorem, tangent and normal, extreme curve plotting and optimization, Curvature, asymptotes, and curve tracing;
Co-ordinate Geometry: Transformation of co-ordinate axes, pair of straight lines, equations of conics and reduction to standard forms, circles, system of circles;

References:

1. Calculus—A New Horizon: By Howard Anton
2. The Elements of Coordinate Geometry: by S. L. Loney
3. Differential Calculus- Das and Mukherjee

Teaching Method: Class Lectures, Handouts via Google classroom, and Power point presentation.
Assessment Details:

- Class Test + Assignments+ Midterm Examination+ Final Examination

Good Luck!

Dr. Ujjwal Kumar Deb
Email: ukdebmath@cuet.ac.bd, Mobile: 01713-109865