MTH206 Analysis II : Power Series and Calculus

Level: 2

Credit Units: 5 Credit Units

Language: ENGLISH

Presentation Pattern: EVERY JAN

Synopsis:

MTH206 introduces the analysis of pure mathematics, Topics include operations such as differentiation and integration, arising from infinite limiting processes. Students should have a sound knowledge of mathematics, as developed in Analysis I.

Topics:

- Limits
- Limits of functions
- Continuity
- Uniform continuity
- Definition of differentiation
- Properties of differentiable functions
- Define Riemann integral
- Integration
- Fundamental Theorem of Calculus
- Taylor’s Theorem
- Convergence of power series
- Manipulation of power series
- The general binomial theorem

Textbooks:

Robert G. Bartle and Donald R. Sherbert.: Introduction to Real Analysis 4th John Wiley
ISBN-13: 9780470911815-AA

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Learning Outcome:

- Show how to prove a mathematical statement in analysis/calculus.
- Calculate the limit/derivative of real-valued functions.
- Determine the radius/interval of convergence of given power series.
- Apply the epsilon delta definition of limits to analysis problems.
- Compute the first few terms of the Taylor series of analytic functions.
- Use the Taylor polynomial of a given real-valued function to approximate the value of the function around a point up to the desired degree of accuracy.

Assessment Strategies:

Continuous Assessment Component	**Weightage (%)**
COMPUTER MARKED ASSIGNMENT	10
TUTOR-MARKED ASSIGNMENT	20
Sub-Total	**30**

Examinable Component	**Weightage (%)**
Written Exam	70
Sub-Total	**70**

Weightage Total	**100**