

MTH320 Mathematical Methods II

Level: 3

Credit Units: 5 Credit Units

Language: ENGLISH

Presentation Pattern: EVERY JULY

Synopsis:

MTH320 Mathematical Methods II gives a comprehensive introduction to more advanced topics such as solving ordinary differential equations with power series solutions, using Laplace transforms to solve ordinary differential equations and solving partial differential equations via Fourier series. Relevant physical models such as vibrating string, heat flow from a body in space and membranes will be taught alongside with the mathematics.

Topics:

- Power Series Solutions
- Solutions about Singular Points
- Laplace Transform
- Inverse Laplace Transform
- Sturm-Liouville Problems
- Fourier Series
- Fourier Transform
- Wave Equation
- Solution by Separating Variables
- Heat Equation
- Laplace Equation
- Solution of PDEs by Laplace Transforms

Textbooks:

Erwin Kreyszig: Advanced Engineering Mathematics 10 Wiley
ISBN-13: 978-0-470-458

Learning Outcome:

- Determine the solutions of a given partial differential equation by Laplace transform.
- Show the validity of given mathematical statements in differential equations.
- Explain the results/conclusions of a mathematical model.
- Solve a given partial differential equation by Fourier series.
- Compute the Fourier series of a piecewise continuous function.
- Sketch solutions of a given differential equation.

Assessment Strategies (Evening Class):

Components	Description	Weightage Allocation (%)
Overall Continuous Assessment	COMPUTER MARKED ASSIGNMENT 1	10
	TUTOR-MARKED ASSIGNMENT 1	20
Overall Examinable Components	Written Exam	70
Total		100