

Mathematics-III
BEG201SH

Year: II

Semester: I

Teaching Schedule Hours/week			Examination Scheme					Total Marks	
			Final		Internal Assessments				
L	T	P	Theory		Practical		Theory		Practical
			Duration	Marks	Duration	Marks			
3	2	-	3	80	-	-	20	-	100

Course Objective:

The purpose of this course is to round out the student's preparation more sophisticated applications with an introduction of linear algebra, a continuous of the study of ordinary differential equations and an introduction to vector algebra and Fourier series.

Course Contents:

- 1.0 Matrices and Determinant. (14 hrs)**
- 1.1 Matrix and Determinant
 - 1.2 Vector Space (Introduction), Dependent and Independent vectors
 - 1.3 Linear Transformation
 - 1.4 System of Linear Equations, Gauss elimination method only
 - 1.5 Inverse of Matrix (Gauss Jordan Method)
 - 1.6 Rank of the Matrix
 - 1.7 Eigen Values of Matrix, Eigen Vectors and its applications
- 2.0 Laplace Transformation (10 hrs)**
- 2.1 Introduction
 - 2.2 Laplace Transform of some Elementary Functions
 - 2.3 Properties of Laplace Transform
 - 2.4 Inverse Laplace Transforms
 - 2.5 Application to differential equations
- 3.0 Line, Surface and Volume Integrals (9 hrs)**
- 3.1 Definition of Line Integral
 - 3.2 Evaluation of Line Integral
 - 3.3 Evaluation of Surface and Volume Integrals
 - 3.4 Diritchlet Integrals
- 4.0 Integral Theorems (6 hrs)**
- 4.1 Greens Theorem in the plane
 - 4.2 Stoke's Theorem (without proof)
 - 4.3 Gauss Divergence Theorem (without proof)
 - 4.4 Consequences and Applications of Integral Theorems
- 5.0 Fourier Series (6 hrs)**
- 5.1 Periodic Function
 - 5.2 Trigonometric Series
 - 5.3 Fourier Series
 - 5.4 Determination of Fourier Coefficients: Euler Formulae $(-\pi, \pi)$
 - 5.5 Fourier Series in the Intervals $(0, 2\pi)$ and $(-l, l)$
 - 5.6 Even and Odd Functions and their Fourier series: Fourier Cosine & Sine Series
 - 5.7 Half Range Function
 - 5.8 Parsevals Formula
 - 5.9 Fourier Series in Complex Form (Introduction)

References:

- E. Kreyszig, Advanced Engineering Mathematics – 5th Edition, Wiley, New York.

- A Text Book of Engineering Mathematics Vol. II – P. R. Pokharel.
- A Text Book of Engineering Mathematics Vol. III – N. B. Khatakho & S. P. Pradhanang.