MATHEMATICS-II
BEG102SH

Year: I Semester: II

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

Objectives:

The basic objective of the course is to provide a sound knowledge of vectors, 3-D analytical geometry, Infinite series and ordinary differential equations.

1. **Analytic geometry of 3-D:** (12 Hrs)
   Planes, Straight lines, Standard equation of sphere, cylinder and cone.

2. **Infinite Series:** (6 Hrs)
   Infinite series and sequences, convergence, ratio, root and integral tests, absolute convergence, power series, radius of convergence.

3. **Plane curves and polar coordinates:** (4 Hrs)
   Plane curves, parametric equations, polar coordinates, integral in the polar coordinates.

4. **Vector Calculus:** (8 Hrs)
   Differentiation and Integration of vectors, gradients, divergence and curl.

5. **Differential Equations:** (15 Hrs)
   First order differential equation, variable separation, homogeneous, linear and exact. Second order differential equations, linear equations with constant coefficient, homogeneous equation with constant coefficients, general solutions, initial value problems, non-homogeneous equations, solutions in series, Legendre, Bessel equations.

Reference Books:

1. Three-dimensional Geometry – Y. R. Sthapit & B. C. Bajracharya.
2. Algebra - G. D. Pant
3. A Text Book of Vector Analysis – M. B. Singh & B. C. Bajracharya
4. Integral Calculus and Differential Equations – G. D. Pant & G. S. Sth
5. Calculus and Analytic Geometry – Thomas & Finney, Narosa Publication House, India.
6. Advanced Engineering Mathematics – E. Kreyszig, 5th Edition, Wiley, New York.