B.Sc. II (MATHEMATICS)
SEMESTER WISE SYLLABUS
WITH EFFECT FROM
2013-14
Teaching Pattern

B.Sc. Part II
Semester III:

Paper I : MAT 201 : Advanced Calculus and Group Theory

Paper II : MAT 202 : Differential Equations

Semester IV :

Paper III : MAT 203 : Abstract Algebra & Differential Equation

Paper IV : MAT 204 : Classical Mechanics & Statics

Teaching Pattern:

1. Four Lectures per week per paper.

2 One tutorial per week per batch per paper. (The batches of tutorials to be formed as prescribed by the University).
SYLLABUS
B. Sc. II (Semester – III)

Paper – I

MAT 201 : Advanced Calculus and Group Theory

Total Marks : 75 (60+15)

UNIT – I

Group : Definition of Group with example and Properties, Sub-group, cosets , Normal Subgroup.

UNIT - II

Permutation groups, product of permutations, even and odd permutation. Cyclic group. Group homorphism and isomorphism. Fundamental theorem of homomorphism.

UNIT III

Limit and continuity of function of two variables Partial differentiation, chain rule, Differential.

UNIT – IV

Jacobins, Homogeneous function, and Euler’s theorem, maxima & minima and saddle point of function of two variables, Lagrange’s multiplier method.

Reference Books :-

1. Prof. T. M. Karade and M. S. Bendre, Advanced Calculus, Sonu Nilu, Bandu Soni Layout, Gayatri road, Parsodi, Nagpur.
SYLLABUS

B. Sc. II (Semester –III)

Paper – II

MAT 202 : Differential Equations

Total Marks : 75 (60+15)

UNIT I
Method of solution of \( \frac{dx}{P} = \frac{dy}{Q} = \frac{dz}{R} \), Pfaffian differential equation, Formation of partial Differential equation, Lagrange’s equations, Linear Partial Differential equation, Charpit’s Method, Compatible Differential Equation.

UNIT – II
Linear partial Differential equation of second & higher order, Homogenous & non – homogeneous equation with constant coefficients, Equation reducible of linear PDEs with constant coefficients.

UNIT – III
Laplace transforms, Existence theorem for Laplace transforms, Linearity of Laplace transform, Shifting theorem, Inverse Laplace transform.

UNIT – IV
Convolution theorem, Laplace transform of derivatives & integrals, Differentiation & integration of transform, Solution of differential equation, Partial differential equation.
Reference Books :-

1. Prof. T. M. Karade, Differential Equations, Sonu Nilu, Bandu Soni Layout, Gayatri road, Parsodi, Nagpur.


