DEPARTMENT OF MATHEMATICS

COURSE OUTCOMES

I SEMESTER B.Sc

Paper – I : Differential Equations

Total Teaching Hours: 60

No. of Hours / Week: 06

Max. Marks: 100 (75M – External & 25M – Internal)

Credits: 05

Course Outcomes:

Students that successfully complete this course will be able to:

- Solve separable, homogeneous, exact, and linear first order differential equations with and without initial conditions.
- Determine regions of the plane over which a given first order differential equation will have a unique solution.
- Solve application problems modeled by seperable,homogeneous,exact,linear first order differential equations, and equations reducible to first order differential equations.
- Determine if a set of functions is linearly dependent or independent by definition and by using the Wronskian.
- Construct a second solution of a differential equation from a known solution.
- Solve homogeneous linear equations with constant coefficients.
- Solve non-homogeneous linear equations with constant coefficients using the methods of undetermined coefficients and variation of parameters.
- Solve simple harmonic motion problems.
- Solve damped motion problems.
- Solve forced motion problems.
- Use power series methods to solve differential equations about ordinary points.
- Use the method of Frobenius to solve differential equations about regular singular points.
- Find the Laplace transform of a function using the definition.
- Use the Translation theorems to find Laplace transforms.
- Find the Laplace transform of derivatives,integrals and periodic functions.
- Use the method of Laplace transforms to solve initial value problems for linear differential equations with constant coefficients.

- Write an nth order differential equation as a first order system.
- Solve a first order initial value problem using Euler's method.
- Solve a first order initial value problem using a second order Runge-Kutta method.

II SEMESTER B.Sc

Paper – II : Solid Geometry

Total Teaching Hours: 60

No. of Hours / Week: 06

Max. Marks: 100 (75M – External & 25M – Internal)

Credits: 05

Course Outcomes:

- Students will be able to identify geometric shapes and prove elementary geometric theorems.
- Demonstrate knowledge and understanding of plane and solid geometry.
- Use geometrical skills to solve simple real world problems.
- Develop technical skills in sketching and drawing.
- State and find surface areas of prisms, pyramids, cylinders, cones and spheres.
- Find the volume of common solids.

III SEMESTER B.Sc

Paper – III : Abstract Algebra

Total Teaching Hours: 60

No. of Hours / Week: 06

Max. Marks: 100 (75M – External & 25M – Internal)

Credits: 05

Course Outcomes:
After successful completion of this course, the student will be able to;
1. Acquire the basic knowledge and structure of groups, subgroups and cyclic groups.
2. Get the significance of the notation of normal subgroups.
3. Get the behavior of permutations and operations on them.

4. Study the homomorphisms and isomorphisms with applications.
5. Understand the ring theory concepts with the help of knowledge in group theory and to prove the theorems.
6. Understand the applications of ring theory in various fields.

IV SEMESTER

Paper – IV : Real Analysis

Total Teaching Hours: 60

No. of Hours/Week: 06

Max Marks: 100 (75M- External & 25M – Internal)

Credits: 05

Course outcomes:

- Define and recognize the basic properties of the field of real numbers.
- Improve and Outline the logical thinking.
- Define and recognize the continuity of real functions.
- Interpret how to know the continuity using the internet.
- Define and recognize the differentiability of real functions and its related theorems.
- Interpret how to know the differentiability and related theorems using the internet.

Paper – V : Linear Algebra

Total Teaching Hours: 60

No. of Hours/Week: 06

Max Marks: 100(75M – External & 25M – Internal)

Credits : 05

Course Outcomes:

- Students will be able to compute the inverse of an invertible matrix.
- Able to compute matrix representation of a linear transformation.
- Students will be able to find Inverse and higher powers of a matrix by using Cayley-Hamilton theorem.
- Able to compute Eigen values and Eigen vectors.
- Able to find whether given transformation is linear or not
- Students will be able to find the rank and nullity of a Linear Transformation

VI SEMESTER B.Sc

Paper VII A – Laplace Transforms

Total Teaching Hours: 60

No. of Hours/Week : 06

Max Marks : 100(75M – External & 25M – Internal)

Credits : 05

Course Outcomes:

- Students will be able to calculate the Laplace Transform of standard functions both from the definition and by using tables
- Students will be able to select and use the appropriate shift theorems in finding Laplace Transforms
- Students will be able to find Laplace Transforms of some special functions
- Students will be able to select and combine the necessary Laplace Transform techniques to solve Ordinary Differential Equations

Paper VIII(A1) – Integral Transforms

Total Teaching Hours: 60

No. of Hours/Week : 06

Max Marks : 100(75M – External & 25M – Internal)

Credits : 05

Course Outcomes:

- Students will be able to know the use of Laplace transform in system modeling, digital signal processing, process control and solving boundary value problems.
- Students will be able to use Fourier Transform in communication theory and signal analysis, image processing and filters, data processing and analysis.
- Solving partial differential equations.
- Solving integral equations by using laplace transform technique.

Paper VIII(A2) - Advanced Numerical Analysis

Total Teaching Hours: 60

No. of Hours/Week : 06

Max Marks : 100(75M – External & 25M – Internal)

Credits : 05

Course Outcomes:

- By the end of the course the student is expected to recognize and apply appropriate theories, principles and concepts relevant to Numerical Analysis
- By the end of the course the student will have the ability to compare the computational methods for advantages and disadvantages, choose the suitable computational method among several existing methods
- Implement the computational methods using any of existing programming languages, testing such methods and compare between them
- Students will be able to solve Ordinary Differential Equations

Paper VIII A3 – PROJECT WORK

- Project work in Mathematics or in Mathematics – related subjects is now very common, especially in applied or statistical topics.
- Everyone knows, projects are generally beneficial to the students to develop deeply into a topic of interest by finding and studying an article or a part of book on that topic and then writing a report , which should include some mathematical analysis and numerical computations.
- The project report and presentation make 20 percent of our course grade and more importantly, is our opportunity to learn about a concept of interest that involves some aspect of analysis.