

Swami Ramanand Teerth Marathwada University, Nanded.
M.A. /M. Sc. (First Year) (Mathematics- Applied
Mathematics) (CBCS) Revised Syllabus Effective from June-
2019

Program Educational Objectives (PEOs):

PEO1: To equip students with knowledge, abilities and insight in mathematics and related fields.

PEO2: Have the ability to pursue interdisciplinary research in Indian Universities and abroad.

PEO3: Utilize the mathematical knowledge to provide solution for real life problems with the help of modelling, simulation.

PEO4: To enable them to work as a mathematical professional in industry or scientific researcher.

PEO5: To enable students to recognize the need for the ability to engage in life-long learning.

PROGRAMME OUTCOMES (POs):

After the completion of the program, students will able to:

PO1: Identify, formulate, and analyze the complex problems using the principles of Mathematics.

PO2: Solve real life problems by applying the Mathematical tools.

PO3: Apply the Mathematical concepts, in all the fields of learning including higher research, and recognize the need and prepare for lifelong learning.

PO4: Secure their place in leading business organizations anywhere in the world.

PO5: Apply ethical principles and commit to professional ethics, responsibilities and norms in the society.

PO6: Gain the knowledge of software which will be useful in the Industry.

PROGRAM SPECIFIC OUTCOMES (PSOs):

PSO1: To understand the concepts of applied mathematics.

PSO2: To develop the problems solving skills and computational skills.

PSO3: To enhance self-learning and improve own performance.

PSO4: To create mathematical models and solving real life problems.

Semester-I

Modern Algebra

Course Outcomes: After completion of the course student will be able to

CO1: Define group and give examples of Group.

CO2: Attain mastery on Nilpotent group, alternating group etc.

CO3: Gain Command on Sylows theorem.

CO4: Solve problems based on rings, maximal and prime ideals.

Paper-II Real Analysis

Course Outcomes: After completion of the course student will be able to

Co1: Verify continuity of functions.

CO2: Acquire the knowledge of L'Hospital rule, derivatives of higher order.

CO3: Analyse convergence of sequence and series of functions.

CO4: Construct proof of Stone-Weierstress theorem, Abels theorem.

Paper no. III Ordinary Differential Equations

Course Outcomes: After completion of the course student will be able to

CO1: Gain the concept of differential equations.

CO2: Solve ordinary differential equations.

CO3: Assimilate the Meaning of existence and uniqueness theorem.

CO4: Solution of ordinary differential equations with the help of software.

Paper No. IV Complex Analysis

Course Outcomes: After completion of the course student will be able to

CO1: Solve problems on Mobius transformation,

CO2: Gain command on analytic functions.

CO3: Explain the Cauchy-Riemann equation, harmonic function.

CO4: Identify different types of singularities.

Paper no. V(A) Discrete Mathematics and Applications

Course Outcomes: After completion of the course student will be able to

CO1: Explain Boolean algebra and its properties.

CO2: Acquire mastery on Travelling Salesman Problem

CO3: Assimilate spanning trees, network flows.

CO4: Illustrate Matrix Representation of Graphs.

Paper No. V(C) Mathematical Software: I (LATEX)

Course Outcomes: After completion of the course student will be able to

CO1: Install Latex software.

CO2: Typeset any document which involve Mathematical expressions.

CO3: Insert images, graphs, tables using LATEX software.

CO4: Prepare presentation using software.

Paper No. VI Tutorial –I

Semester-II

Paper No. VII NUMERICAL LINEAR ALGEBRA

Course Outcomes: After completion of the course student will be able to

CO1: Analyse permutation, HessenbergCompanion, Non derogatory.

CO2: Construct basic algorithms for computing Norm of a vector.

CO3: Gain command over Householder Transformations and applications to QR factorization.

CO4: Introduce Polynomial fitting method with applications

Paper-VIII Classical Mechanics

Course Outcomes: After completion of the course student will be able to

CO1: Define and understand basic mechanical concepts related to constraints, degree of freedom and generalize coordinates.

CO2: Derive expression for Simple pendulum, Atwood machine etc

CO3: Describe and understand the motion of mechanical system using Lagrange- Hamilton formulization.

CO4: ExplainBrachistochrone Problem, Isoperimetric Problems.

Paper no. IX Partial Differential Equations

Course Outcomes: After completion of the course student will be able to

CO1: Classify partial differential equations.

CO2: Solve of Partial Differential Equations to find complete integral.

CO3: Gain command over Canonical Forms.

CO4: Introduce boundary conditions and solve problems on it.

Paper No. X Numerical Techniques

Course Outcomes: After completion of the course student will be able to

CO1: Analyse rate of convergence.

CO2: Solve system of equation using numerical methods.

CO3: Solve problems on Gauss-Seidel Method, Jacobi Iteration Method, Successive Over Relaxation Method.

CO4: Construct Langrange Interpolating Polynomial, Newton's Divided Difference Interpolating Polynomial.

Paper no.XI (A) Probability Distributions and Testing of Hypothesis

Course Outcomes: After completion of the course student will be able to

CO1: Solve problems on Multiplication theorem of probability, independent events.

CO2: Analyse Distribution Function, Discrete and Continuous Random variable, Generating function. CO3: Apply knowledge of Poisson distribution to solve problems.

CO4: Gain command on Students t-Distribution, Applications of F-distribution etc.

Paper no XI(B) Mathematical Software: II M

Course Outcomes: After completion of the course student will be able to

CO1: Perform basic computations.

CO2: Gain command on loops, solution difficulties while using software.

CO3: Plot graphs and perform various operations using control expression.

CO4: Solve differential equations using software.

Paper No. XII Tutorial –II