ANDHRA MAHILA SABHA
ARTS & SCIENCE COLLEGE FOR WOMEN
Autonomous - NAAC Re-Accredited, O.U.Campus, Hyderabad – 500 007
Tel: 040-27098811.04027070471 (Direct).Fax:04027073346
Email: amsascw1968@gmail.com , ascwams@yahoo.co.in, Website: amsascw.org

Programme Educational Objectives (PEOs)

The B.Sc (MSCs) programme aims to prepare graduates who will:

PEO 1: Develop a strong foundation in Mathematics, Statistics, and Computer Science to solve real-world problems and pursue higher studies or research in related disciplines.

PEO 2: Acquire analytical, logical, and computational skills to apply theoretical knowledge effectively in various professional and interdisciplinary contexts.

PEO 3: Demonstrate proficiency in using modern tools, programming languages, and statistical software for data analysis, modeling, and decision-making.

PEO 4: Engage in continuous learning and adapt to emerging technologies to meet the evolving demands of industry and academia.

Program Objectives (PO's)

Upon successful completion of the B.Sc (MSCs) programme, students will be able to:

PO 1: Knowledge Application

Apply fundamental concepts of Mathematics, Statistics, and Computer Science to analyze and solve real-world scientific and computational problems.

PO 2: Critical Thinking and Problem Solving

Develop analytical and logical reasoning skills to identify, formulate, and provide effective solutions using quantitative and computational approaches.

PO 3: Modern Tool Usage

Use appropriate statistical, computational, and programming tools to design, analyze, and interpret data efficiently.

PO 4: Data Analysis and Interpretation

Apply statistical and computational techniques to collect, organize, and interpret data for informed decision-making.

Dr. M.A. SRINIVAS
Professor
Department of Mathematics
College of Engineering
Jawaharlal Nehru Technological University
Kukatpally, Hyderabad- 500 085.

1/8/2025

Dr. N. KISHAN
M.Sc., Ph.D.
Senior Professor of Mathematics
Department of Mathematics
Osmania University, Hyd-07.

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Programme Outcomes (POs)

On successful completion of the B.Sc (MSCS) programme, students will be able to:

PO 1: Disciplinary Knowledge
Demonstrate comprehensive knowledge of Mathematics, Statistics, and Computer Science and apply it to solve theoretical and practical problems.

PO 2: Problem Analysis

Identify, analyze, and provide logical solutions to complex problems using mathematical modeling, statistical reasoning, and computational methods.

PO 3: Modern Tool Usage

Use modern software tools, programming environments, and statistical packages to analyze data, design algorithms, and develop efficient applications.

PO 4: Data Handling and Interpretation

Collect, process, and interpret data using appropriate statistical and computational techniques for effective decision-making.

PROGRAM SPECIFIC OUTCOMES(PSOs)

PSOs	Mathematics Graduates will be able to:
PSO1	The broad nature of the degree is aimed at developing manpower in order to address the acute shortage of teachers in these areas, They are well grounded to undertake specialized postgraduate programmes in any of the areas (Mathematics, Statistics or Computer Science).
PSO2	Apply their knowledge in modern industry or teaching, or secure acceptance in high-quality graduate programs in mathematics and other fields such as the field of quantitative/mathematical finance, mathematical computing, statistics and actuarial science.
PSO3	Apply their Programming skills learnt from different software packages, and algorithms suitable to research and Industry.
PSO4	Collect, process, and interpret data using appropriate statistical and computational techniques for effective decision-making and Exhibit ethical and professional behavior.

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SYLLABUS : SEMESTER- I
DSC-I : DIFFERENTIAL EQUATIONS

Subject Code: Mat101	
Instruction	**4 Hrs/Wk**
Credits	**4**
Duration of Semester Examination	**3 Hrs**
Duration of Sessional Examination	**1 Hr**
Semester Examination	**80 Marks**
Sessional Examination	**20Marks**

Course Objectives

After studying this course, students will be able to:

1: Understand the basic concepts, types, and formation of first-order and first-degree differential equations and learn methods for their analytical solutions.

2: Develop problem-solving skills to handle non-linear and higher-order differential equations, particularly those not of the first degree.

3: Acquire techniques for solving higher-order linear differential equations with constant coefficients using standard operator methods.

4: Explore and apply advanced methods such as variation of parameters, Cauchy–Euler, and Legendre's equations, and understand total and simultaneous differential equations.

Course Outcomes

1: Apply various methods to solve first-order and first-degree differential equations, including separable, homogeneous, linear, exact, and reducible forms, using integrating factors and variable transformations.

2: Analyze and solve first-order but not first-degree differential equations such as Clairaut's equation, and apply them to real-life models like growth, decay, radioactivity, and orthogonal trajectories.

3: Solve higher-order linear differential equations with constant coefficients using the operator method and method of undetermined coefficients, and interpret homogeneous and non-homogeneous solutions.

4: Employ variation of parameters and handle linear differential equations with variable coefficients, including Cauchy–Euler and Legendre's equations, as well as total and simultaneous differential equations.

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M.Sc, Ph.D
Senior Professor of Mathematics
Department of Mathematics
Osmania University, Hyd-07.

Dr. M.A. SRINIVAS
Professor
Department of Mathematics
College of Engineering
Jawaharlal Nehru Technological University

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SYLLABUS: SEMESTER- II

DSC-II : REAL ANALYSIS

Subject Code: Mat 15

Instruction:	**4Hrs/wk**
Credits	**4**
Duration of Semester Examination	**3 Hrs**
Duration of Session Examination	**1 Hr**
Semester Examination	**80 Marks**
Session Examination	**20 Marks**

Course Objectives

After successful completion of this course, the students will be able to

1: Understand the algebraic, order, and completeness properties of real numbers and explore the behaviour of sets and sequences within the real number system.

2: Develop analytical skills to test the convergence and divergence of infinite series and understand the concepts of limits and continuity for real-valued functions.

3: Comprehend and apply the principles of differentiation to analyse the behaviour of functions, proving classical results such as Rolle's, Lagrange's, and Cauchy's Mean Value Theorems.

4: Grasp the theory of Riemann integration, understand conditions of integrability, and establish the connection between integration and differentiation through the Fundamental Theorem of Calculus.

Course Outcomes

1:Explain the field, order, and completeness properties of real numbers, and analyse the properties of open, closed, countable, and uncountable sets along with convergent and monotonic sequences.

2:Apply various tests for convergence of infinite series, including comparison, ratio, root, and integral tests, and examine the limits and continuity of real-valued functions.

3:Demonstrate understanding of differentiability and apply Rolle's, Lagrange's, and Cauchy's Mean Value Theorems to study the behaviour of functions and their higher-order derivatives.)

4: Evaluate Riemann integrals, verify integrability conditions, use Darboux's theorem, and establish the Fundamental Theorem of Calculus linking differentiation and integration.

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