ST. JOSEPH'S DEGREE & PG COLLEGE

(Autonomous) - Affiliated to Osmania University
Re-accredited by NAAC (3rd Cycle)
Basheerbagh, King Koti Road, Hyderabad – 29

LEARNING OUTCOMES BASED CURRICULUM FRAMEWORK (LOCF) FOR UNDERGRADUATE PROGRAMMES

FACULTY OF SCIENCES

DEPARTMENT OF MATHEMATICS & STATISTICS

BSc Data Science (Honors)

(Common Core Syllabus for all the Students Admitted from the Academic Year 2024-27 Batch onwards)

SEMESTER I
FACULTY OF SCIENCE
DSCT: MATHEMATICS COURSE-I (Differential & Integral Calculus and Applications)

Scheme of Instruction	**Scheme of Examination**
Course Code: DICA-1-MM-24T	Course Title : Differential & Integral Calculus with Applications
Credits : 4	Max. Marks : 100
Category : DSCT	Internal Examination : 30
Hours/Week :4	SBT :10
Total duration Hrs : 60	External Examination :60
Instruction Mode: Lecture Method	External Exam Duration :3 Hrs

Course Objective: The course aims at imparting the knowledge of successive , Partial and Total differentiation and their Applications to Maxima &Minima, Length of Arcs, Curvature, & techniques of double and triple integrals and their applications .

Course Outcomes: Upon successful completion of this course, students will demonstrate the ability to	**Cognitive Level**
CO1: Apply calculus techniques to determine the nth derivatives of rational functions and products of powers of sines and cosines,	BL4
CO 2: Apply Euler's Theorem on Homogeneous Functions using the comprehensive understanding of partial differentiation techniques	BL4
CO 3: Demonstrate proficiency in total differentiation and apply the differentiation techniques to solve the problems	BL4
CO 4: Demonstrate proficiency in multiple integration techniques, including the application of double and triple integrals for determining areas, volumes of solids as well as the ability to manipulate integrals through change of order	BL4

SEMESTER- I
FACULTY OF SCIENCE
DSCP: MATHEMATICS PAPER-I (Differential & Integral Calculus with Applications)

Scheme of Instruction	**Scheme of Examination**
Course Code: DICA-1-MM-24P	Course Title : Differential & Integral Calculus with Applications (Practical)
Credits : 1	Max. Marks : 50
Category : DSCP	Internal Examination : 20
Hours/Week :3	External Examination :30
Total duration Hrs : 45	External Exam Duration :3 Hrs
Instruction Mode: Lecture Method/Using software	

Course Objective: The course aims at imparting the knowledge of successive , Partial and Total differentiation and their Applications to Maxima &Minima, Length of Arcs, Curvature, & techniques of double and triple integrals and their applications .

Course Outcomes: Upon successful completion of this course, students will demonstrate the ability to	**Cognitive Level**
CO 1: Apply calculus techniques to determine the nth derivatives of rational functions and products of powers of sines and cosines,	BL4
CO 2: Apply Euler's Theorem on Homogeneous Functions using the comprehensive understanding of partial differentiation techniques	BL4
CO 3: Demonstrate proficiency in total differentiation and apply the differentiation techniques to solve the problems	BL4
CO 4: Demonstrate proficiency in multiple integration techniques, including the application of double and triple integrals for determining areas, volumes of solids as well as the ability to manipulate integrals through change of order	BL4

SEMESTER II
FACULTY OF SCIENCE
DSCT: MATHEMATICS PAPER-II (Differential Equations and Applications)

Scheme of Instruction	**Scheme of Examination**
Course Code: DEA-2-MM-24T	Course Title : Differential Equations and Applications
Credits : 4	Max. Marks : 100
Category :DSCT	Internal Examination : 30
Hours/Week :4	SBT :10
Total duration Hrs : 60	External Examination :60
Instruction Mode: Lecture Method	External Exam Duration :3 Hrs

Course Objective: To impart the knowledge of various types of Differential Equations, methods of solving ordinary differential equations, formulation of partial differential equations, methods of solving first order partial differential equations.

Course Outcomes: By the end of the course the student would be able to	**Cognitive Level**
CO1: Identify the types of differential equations and solve first order first degree differential equations.	BL4
CO 2: Solve first order higher degree differential equations and apply these differential equations to model real-world phenomena	BL4
CO 3: Translate the skills to solve higher order homogeneous and non-homogeneous differential equations with constant as well as variable coefficients.	BL4
CO 4: Solve linear differential equations with non-constant coefficients, formulate & Solve the Partial differential equations of first order	BL4

SEMESTER II
FACULTY OF SCIENCE
DSCP: MATHEMATICS PAPER-II (Differential Equations and Applications)

Scheme of Instruction	**Scheme of Examination**
Course Code: DEA-2-MM-24P	Course Title : Differential Equations (Practical)
Credits : 1	Max. Marks : 50
Category :DSCP	Internal Examination : 20
Hours/Week : 3	External Examination :30
Total duration Hrs : 45	External Exam Duration :3 Hrs
Instruction Mode: Lecture Method	

Course Objective: To impart the knowledge of various types of Differential Equations, methods of solving ordinary differential equations, formulation of partial differential equations, methods of solving first order partial differential equations.

Course Outcomes: By the end of the course the student would be able to	**Cognitive Level**
CO1: Identify the types of differential equations and solve first order first degree differential equations.	BL4
CO 2: Solve first order higher degree differential equations and apply these differential equations to model real-world phenomena	BL4
CO 3: Translate the skills to solve higher order homogeneous and non-homogeneous differential equations with constant as well as variable coefficients.	BL4
CO 4: Solve linear differential equations with non-constant coefficients, formulate & Solve the Partial differential equations of first order	BL4