

DEPARTMENT OF MATHEMATICS
COURSE OUTCOME (CO)-CCF SYSTEM
YEAR OF INTRODUCTION: 2023
B.A./B.SC. (HONOURS): CORE COURSES (CC)

COURSE CODE	COURSE NAME	COURSE OUTCOME
SEMESTER 1		
CC- 1	CALCULUS, GEOMETRY AND VECTOR ANALYSIS	To acquaint students with the basic knowledge of calculus, geometry and vector algebra.
SEC-1	C-PROGRAMING	This course is designed to develop basic C-programing skill of the students. This helps them to prepare for numerical practical for upcoming semester.
SEMESTER 2		
CC- 2	ALGEBRA	To provide students with the knowledge of Complex number, theory of equation, inequalities, number theory, rank of matrix and their application.
SEC-2	ARTIFICIAL INTELLIGENCE	To provide a detailed idea about AI and its scopes, ethics, applications, social impacts. This helps them to prepare for upcoming job market in future.
SEMESTER 3		
CC- 3	REAL ANALYSIS	To provide students with detailed understanding in real numbers, sequences and sub-sequences along with idea of convergence of infinite series.
CC- 4	ORDINARY DIFFERENTIAL EQUATIONS-I AND GROUP THEORY-I	To give a basic idea of group and its sub-groups and its connection with symmetries. Also this enables students for solving ordinary differential equations which will be required in other papers of this programme.
SEC-3	LINEAR PROGRAMMING AND GAME THEORY	Linear programming provides a method to optimize operations within certain constraints. It is used to make process efficient and cost effective. Some areas of application for linear programming include food and agriculture

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SEMESTER 4		
CC- 5	THEORY OF REAL FUNCTION	To update students with the ideas of limits, continuity and differentiability of real functions.
CC- 6	MECHANICS-I	Express physical phenomenon in physics in terms of mathematics and solve it.
CC- 7	PARTIAL DIFFERENTIAL EQUATION AND MULTIVARIATE CALCULUS-I	It introduces for basic knowledge of the said topic such that they can apply it in mathematical methods of physical problems.
CC- 8	GROUP THEORY-II & RING THEORY -I	It introduces a detailed conception on group theory and a basic conception of ring theory. This course will enable students to solve advanced algebraic problems.

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Program Outcomes for 4-Year Mathematics (Honours) Degree

1. Knowledge and Understanding:

- Students will demonstrate comprehensive knowledge of all major branches of mathematics, including Algebra, Calculus, and their interconnections.
- Students will explain and interpret the theoretical foundations and practical applications of mathematical concepts in diverse contexts.

2. Cognitive Skills (Understanding, Applying, Analyzing):

- Students will analyze mathematical problems systematically and apply logical reasoning to solve them effectively.
- Students will apply mathematical tools and techniques to model and solve real-world problems in academic and non-academic contexts.
- Students will evaluate the relevance and accuracy of mathematical models used in research and industry.

3. Practical Skills:

- Students will develop proficiency in using mathematical tools for computations and problem-solving, particularly in Algebra, Calculus, and related areas.
- Students will create and implement solutions for practical challenges by integrating knowledge across various mathematical disciplines.

4. Professional Skills:

- Students will demonstrate readiness for careers in academia, including roles such as teaching faculty in schools, colleges, and training institutes.
- Students will formulate research questions and engage in scholarly activities in research institutions.
- Students will exhibit adaptability in non-academic careers, including sectors like banking, insurance, public services, IT, and other technological fields.

5. Personal Development:

- Students will enhance their logical and analytical skills, fostering a deeper appreciation for mathematics and its role in problem-solving and innovation.
- Students will develop lifelong learning habits by integrating mathematical thinking into professional and personal development.

H.O.D., Dept of Mathematics

DEPARTMENT OF MATHEMATICS

COURSE OUTCOME (CO)-CBCS SYSTEM

YEAR OF INTRODUCTION: 2018

B.A./B.SC. (HONOURS): CORE COURSES (CC)

COURSE CODE	COURSE NAME	COURSE OUTCOME
SEMESTER 1		
CC- 1	CALCULUS, GEOMETRY AND VECTOR ANALYSIS	To acquaint students with the basic knowledge of calculus, geometry and vector algebra.
CC- 2	ALGEBRA	To provide students with the know ledge of Complex number, theory of equation, inequalities, number theory,rank of matrix and their application.
SEMESTER 2		
CC- 3	REAL ANALYSIS	To provide students with detailed understanding in real numbers, sequences and sub-sequences along with idea of convergence of infinite series.
CC- 4	GROUP THEORY-I	To give a detailed idea of normal sub-group and knowledge of homomorphism, isomorphism of groups, quotient group etc.
SEMESTER 3		
CC- 5	THEORY OF REAL FUNCTION	To update students with the ideas of Real Analysis.
CC- 6	RING THEORY & LINEAR ALGEBRA-I	It introduces for basic conception of modern and linear algebra of the students
CC- 7	ORDINARY DIFFERENTIAL EQUATION AND MULTIVARIATE CALCULUS-I	It introduces for basic knowledge of the said topic such that they can apply it in mathematical methods of physical problems

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SEMESTER 4		
CC- 8	RIEMANN INTEGRATION & SERIES OF FUNCTIONS	To enable students with the depth know ledge of real analysis
CC- 9	PARTIAL DIFFRENCIAL EQUATION AND MULTIVAREATE CALCULUS-II	To teach the method of solution of partial differentialequation.
CC- 10	MECHANICS	Express more and more physical phenomenon in mathematics and their graph
SEMESTER 5		
CC- 11	PROBABILTYAND STATISTICS	Application of probability theory in everyday life is reliability and in business it used in the calculation of longterm gains and losses
CC- 12	GROUP THEORY-II & LINEAR ALGEBRA-II	Group can be found in geometry representing phenomenon such as symmetry and certain type of transformation
SEMESTER 6		
CC- 13	METRIC SPACE & COMPLEX ANALYSIS	In mathematics, a metric space is a set where a distance is defined between elements of a set. Metric space method have been employedfor decades in various application , for example in internet search engines, image classifications etc
CC- 14	NUMERICA L METHODS	Student can know that it is used for computer science for root finding Also they can know that it is used for multi dimensional root finding

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B.A./B.SC. (HONOURS): SKILL ENHANCEMENT COURSE (SEC)

COURSE CODE	COURSE NAME	COURSE OUTCOME
SEMESTER 3		
SEC-A-1	C-PROGRAMING	This course is designed to develop basic C-programing skill of the students. This helps them to prepare for numerical practical for upcoming semester.
SEMESTER 4		
SEC-B-1	MATHEMATICAL LOGIC	To enhance the skill about mathematical logic this course is very useful, as this is needed in every step of higher mathematics.

B.A./B.SC. (HONOURS): ELECTIVE: DISCIPLINE SPECIFIC (DSE)

COURSE CODE	COURSE NAME	COURSE OUTCOME
SEMESTER 5		
DSE-A-1	ADVANCED ALGEBRA	The course is designed to enhance the knowledge on algebra. This helps the students to get an overview about post graduate mathematics
DSE-B-1	LINEAR PROGRAMMING AND GAME THEORY	Linear programming provides a method to optimize operations within certain constraints. It is used to make process efficient and cost effective. Some areas of application for linear programming include food and agriculture

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SEMESTER 6		
DSE-A-2	FLUIDSTATICS AND ELEMENTARY FLUID DYNAMICS	Fluid mechanics has a wide range of applications in mechanical and chemical engineering, in biological systems, and in astrophysics.
DSE-B-4	ADVANCED MECHANICS	Understand the mathematical and physical foundations of the continuum mechanics of solids, including deformation and stress measures, elastic and plastic stress-strain relations, and failure criteria; have the ability to pose and solve boundary value problems involving deformable solids; be able to analyze wave propagation and vibrations in elastic solids and understand the theoretical basis for finite element analysis of elastic solids.

Programme Outcome

- Students will be entirely equipped with the knowledge of all the branches of Mathematics.
- Their logical skill will be improved.
- Practical knowledge on application of different branches of mathematics is enhanced.
- Students would have a strong understanding of using mathematical tools of Algebra and Calculus.
- Students will be equipped with mathematics skills and techniques which can be applied in both academic and non-academic areas of work.
- Students will have placements scopes in academic areas include jobs as teaching faculties in schools, colleges, business schools, training schools
- Students will have placements scopes in research positions in different research institutes.
- Students will have placements scopes in non – academic areas include jobs in sectors like banks, insurance, public services, IT and other technological areas.

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