



GOVT. V.Y.T. PG AUTONOMOUS COLLEGE DURG

Department of Mathematics Teaching Plan Academic Year – 2023-24



NAME OF THE TEACHER :- Dr. PADMAVATI

CLASS : M.Sc. I SEM

PAPER- IV

TITLE – ADVANCED COMPLEX ANALYSIS (I)

Month	Unit/ Title	Topic of lectures	No. of lecture	Method/Mode of Delivery
August	I	Complex integration. Cauchy-Goursat theorem. Cauchy's integral formula.	06	1. Flip the class 2. Group discussion 3. Problem Solving 4. Virtual Classes
September	I & II	Higher order derivatives. Morera's theorem. Cauchy's inequality and Liouville's theorem. Taylor's theorem. Laurent's series. The zero of an analytic function. Singular and classification of singularity. Meromorphic functions. The argument principle. Rouché's theorem. The fundamental theorem of algebra.	22	
October	II	Maximum modulus principle. Schwarz lemma. Inverse function theorem. Residues. Cauchy's residue theorem.	19	
November	II & III	Evaluation of integrals. Branches of many valued functions with special reference to $\arg z$, $\log z$ and z^a . Definitions and examples of Conformal mappings.	17	
December	IV	Spaces of analytic functions. Hurwitz's theorem. Montel's theorem. Riemann mapping theorem. Weierstrass Factorization theorem.	12	

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Department of Mathematics Teaching Plan Academic Year – 2023-24



NAME OF THE TEACHER :- DR. PADMAVATI

CLASS : M.SC. III SEM

PAPER- III

TITLE – PROGRAMMING IN C (WITH ANSI FEATURES) -I

Month	Unit/Title	Topic of lectures	No. of lecture	Method/Mode of Delivery
August	I	An overview of programming. Programming language. Classification. C Essentials-Program Development. Functions. Anatomy of a C Function	14	<ol style="list-style-type: none"> 1. Flip the class 2. Group discussion 3. Problem Solving 4. Virtual Classes
September	I	Variables and Constants. Expressions. Statements. Formatting Source Files. Continuation Character. The Preprocessor.	23	
October	II	Scalar Data Types-Declarations. Different Types of Integers. Different kinds of Integer Constants. Floating-Point Types. Initialization. Mixing Types. Explicit Conversions-Casts. Enumeration Types.	22	
	III	The Void Data Type. Typedefs. Finding the Address of an object. Pointers. Control Flow-Conditional Branching. The Switch Statement. Looping. Nested Loops The break and continue Statements. The go to statement. Infinite Loops.		
November	III	Operators and Expressions-Precedence and Associability. Unary Plus and Minus operators. Binary Arithmetic Operators. Arithmetic Assignment Operators. Increment and Decrement Operators. Comma Operator. Relational Operators. Logical Operators. Bit - Manipulation Operators. Bitwise Assignment Operators. Cast Operator. Size of Operators. Conditional Operator. Memory Operators.	20	
December	IV	Arrays -Declaring an Array. Arrays and Memory. Initializing Arrays. Encryption and Decryption	20	

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NAME OF THE TEACHER :- DR. PADMAVATI

CLASS : M.SC. II SEM

PAPER- IV

TITLE – ADVANCED COMPLEX ANALYSIS (II)

Month	Unit/Title	Topic of lectures	No. of lecture	Method/Mode of Delivery
January	I	Introduction of syllabus, Gamma function and its properties. Riemann Zeta function. Riemann's functional equation	12	1. Flip the class 2. Group discussion 3. Problem Solving 4. Virtual Classes
February	I & II	Runge's theorem. Mittag-Leffler's theorem. Analytic Continuation. Uniqueness of direct analytic continuation. Uniqueness of analytic continuation along a curve. Power series method of analytic continuation. Schwarz Reflection principle. Monodromy theorem and its consequences.	22	
March	II & III	Harmonic functions on a disk. Harnack's inequality and theorem. Dirichlet Problem. Green's function. Canonical products. Jensen's formula. Poisson-Jensen formula. Hadamard's three circles theorem. Order of an entire function.	21	
April	III & IV	Exponent of Convergence. Borel's theorem. Hadamard's factorization theorem. Bloch's theorem. The Little Picard theorem. Schottky's theorem. Montel Caratheodory and the Great picard theorem. Univalent functions. Bieberbach's conjecture (Statement only) and the "1/4-theorem".	21	

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NAME OF THE TEACHER :- Dr. PADMAVATI

CLASS : M.Sc. IV SEM

PAPER- III

TITLE – PROGRAMMING IN C (WITH ANSI FEATURES) -II

Month	Unit/Title	Topic of lectures	No. of lecture	Method/Mode of Delivery
January	I	Storage Classes-Fixed vs. Automatic Duration. Scope. Global variables. The register Specifier. ANSI rules for the syntax and Semantics of the storage-class keywords. Dynamic Memory Allocation	16	<ol style="list-style-type: none"> 1. Flip the class 2. Group discussion 3. Problem Solving 4. Virtual Classes
February	II	Pointers- Pointer Arithmetic. Passing Pointers as Function Arguments. Accessing Array Elements through Pointers. Passing Arrays as Function Arguments. Sorting Algorithms. Strings. Multidimensional Arrays. Arrays of Pointers. Pointers to Pointers	20	
March	III	Functions-Passing Arguments. Declarations and Calls. Pointers to Functions. Recursion. The main () Function. Complex Declarations. The C Preprocessor-Macro Substitution. Conditional Compilation. Include Facility. Line Control.	24	
April	IV	Structures and Unions-Structures. Linked Lists. Unions, enum Declarations. Input and Output Streams, Buffering. The <Stdio.h> Header File. Error Handling. Opening and Closing a File. Reading and Writing Data. Selecting an I/O Method. Unbuffered I/O Random Access. The standard library for Input/Output.	20	

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Department of Mathematics Teaching Plan Academic Year – 2023-24



TEACHER :- DR. PADMAVATI

CLASS : B.SC. III

PAPER- III

TITLE – DISCRETE MATHEMATICS

Month	Unit/Title	Topic of lectures	No. of lecture	Method/Mode of Delivery
August	I	Sets and proposition - cardinality. Mathematical induction. Principle of inclusion and exclusion.	7	1.Flip the class 2.Group discussion 3.Problem Solving 4.Virtual Classes
September	I	Computability and formal languages - Ordered sets. Languages, Phrase structure grammars. Types of grammars and languages. Permutations, Combinations and Discrete probability	13	
October	II	Graphs and planar Graphs - Basic terminology, Multi graphs, Weighed graphs, Paths and circuits, Shortest paths,	12	
November	II	Eularian paths and circuits. Travelling salesman problem, Planar graphs. Trees.	11	
December	III	Finite state machines Equivalent machines. Finite state machines as language recognizers. Analysis of algorithms - Time complexity. Complexity of problems. Discrete numeric functions and Generating functions.	12	
January	IV	Recurrence relations and Recursive algorithms – Linear recurrence relations with constant coefficients. Homogeneous solutions. Particular solution. Total solution. Solution by the method of generating functions	11	
February	V	Boolean algebras - Lattice and algebraic structures. Duality. Distributive and complemented Lattices. Boolean lattices and Boolean algebras. Boolean functions and expressions	12	
March	V	Proposition calculus. Design and implementation of Digital Networks. Switching circuits.	11	

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