



## ACADEMIC CALENDAR

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# Teaching Plan

Shri Shankaracharya Mahavidyalaya, Bhilai Department of Mathematics Name of the Professor - Mrs. Preeti Shrivastava Subject Code - General Relativity <b>Teaching Plan</b> Class - M.Sc III <sup>rd</sup> sem (2014-15)					Shri Shankaracharya Mahavidyalaya, Bhilai Department of Mathematics Name of the Professor - Mrs. Preeti Shrivastava Subject Code - General Relativity and <b>Teaching Plan</b> Class - M.Sc III <sup>rd</sup> sem (2014-15)				
S. No.	Lectures (Numbers allocated for)	Topic	Unit	Rem	S. No.	Lectures (Numbers allocated for)	Topic	Unit	Rem
01	06	General Relativity, transformation of coordinate tensors, Algebra of tensor symmetric and skew symmetric tensors and quotient law, Riemannian metric, Parallel transport, Christoffel symbol, covariant derivatives, intrinsic derivatives and geodesics.	I		03	04	Principle of equivalence and General covariance, geodesic principle, motion approximation of relativities, equation of motion, einstein's field equation and its newtonian approximation.	III	
02	06	Riemann christoffel curved spacetime tensors and its symmetric properties, Bianchi identities and einstein tensors, Review of the special theory of relativity and the newtonian theory of gravitation.	II		04	05	Schwarzschild external field and the isometric tensor, Planetary orbits and analogues of Kepler's law in general relativity, Advanced of Perihelion of a Planet, Bending of light ray in a gravitation field.	IV	

Shri Shankaracharya Mahavidyalaya, Bhilai Department of Mathematics Name of the Professor - Alka Devi Subject Code - Complex Analysis (4) <b>Teaching Plan</b> Class - M.Sc (I) sem					Shri Shankaracharya Mahavidyalaya, Bhilai Department of Mathematics Name of the Professor - Mrs. N. Vinita Subject Code - Advanced Discrete Mathematics (5) <b>Teaching Plan</b> Class - M.Sc (I) sem				
S. No.	Lectures (Numbers allocated for)	Topic	Unit	Remarks	No.	Lectures (Numbers allocated for)	Topic	Unit	Remarks
01	15	Unit-I Complex integration, Cauchy-Goursat Theorem, Cauchy's integral formula, Higher order derivatives, Morera's Theorem, Cauchy's inequality and Liouville's theorem, The fundamental theorem of algebra, Taylor's theorem, Laurent's series, Isolated singularities, Meromorphic functions.	I		01	10	Unit-I Formal Logic-Statements, Symbolic Representation and Tautologies, Quantifiers, Predicates and Validity, Propositional Logic, Semigroups & Monoids (including those pertaining to concatenation operation).	I	
02	15	Unit-II Maximum modulus principle, Schwarz lemma, The argument principle, Rouché's theorem, Inverse function theorem.	II		02	10	Unit-II Homomorphism of semigroups and monoids, Congruence relation and Quotient Semigroups, Subsemigroup and submonoids, Direct Products, Basic Homomorphism Theorem.	II	
03	15	Unit-III Residues, Cauchy's residue theorem, Evaluation of integrals, Branches of many valued functions with special reference to arg z, log z and z <sup>a</sup> .	III		03	10	Unit-III Lattices, Lattices as partially ordered sets, Their properties, Lattices as Algebraic Systems, Sublattices, Direct products, and Homomorphisms, Some Special Lattices e.g., Complete, Complemented and Distributive Lattices, Boolean Algebras-Boolean Algebras as Lattices, Various Boolean Identities, The Switching Algebra example, Subalgebras.	III	
04	10	Unit-IV Bilinear transformations, their properties and classifications, Definitions and examples of Conformal mappings.	IV		04	15	Unit-IV Direct Products and Homomorphisms, Join Irreducible elements, Atoms and Miniterms, Boolean Forms and Their Equivalence, Minterm Boolean Forms, Sum of Products, Canonical Forms, Minimization of Boolean Functions, Applications of Boolean Algebra to Switching Theory (using AND/OR & NOT gates), The Karnaugh Map Method.	IV	
05	05	Unit-V Spaces of analytic functions, Hurwitz's theorem, Montel's theorem, Riemann mapping theorem.	V		05	15	Unit-V Grammar and Languages, Phrase-Structure Grammars, Rewriting Rules, Derivations, Sentential Forms, Language generated by a Grammar, Regular, Context-Free, and Context Sensitive Grammars and Languages, Regular sets, Regular Expressions and the Pumping Lemma, Kleene's Theorem, Notions of Syntax Analysis, Polish Notations, Conversion of Infix Expressions to Polish Notations, The Reverse Polish Notation.	V	