

Rajarshi Shahu Mahavidyalaya, Latur
(Autonomous)

Structured Work Plan for Teaching

First Term (July 2019 to Nov 2019)

1. Details of Classes to be taught

Sr. No	Class	Semester	Name of Asstt. Prof.	Subject	Paper
1	B.Sc.III	V	D.M.Ghuge	Mathematics	Metric Spaces
2	M.Sc.I	I			Abstract Algebra
4	M.Sc.II	III			Ring Theory

2. Summary of Lesson Plan

Name of Teacher: D.M.Ghuge

Class

: B.Sc.III (V- Semester) :Metric Spaces

Sr. No.	Subject	Unit and Chapter to be covered	Date	No. of Lectures	Academic activities to be organized	No. of Test / Assignment with topic and date
1	Mathematics	Unit I: Metric Space, Introduction, Metric, Neighborhood, Limit Point, Isolated Point Closed Set, Boundary Sets, Interior point, Interior, Open Set. Unit II: Cauchy Sequence, Complete Metric spaces, Baire category Theorem Compactness & Connectedness. Unit III: Weierstrass Theorem, Sequen	21-06-2019 To 24-07-2019	15	workshop Classroom Seminar	
			29-07-2019 To 28-08-2019	15		

	Compactness, Totally bounded Lebesgue number, Lebesgue Cov lemma, Continuity and Uniform Continuity	3-09-2019 To 30-09-2019	15		
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3. Summary of Lesson Plan

Name of Teacher: D.M.Ghugre

Class

: M.Sc.I (I- Semester) Abstract algebra

Sr. No.	Subject	Unit and Chapter to be covered	Date	No. of Lectures	Academic activities to be organized	No. of Test / Assignment with topic and date
1	Mathematics	Unit-I: Groups, semi groups and groups, Homomorphism, Subgroups and cosets, Cyclic groups, Generators and relations, Normal subgroup and quotient group Unit-II: Isomorphism theorems, Automorphism, Conjugacy and G-sets, Normal series, Solvable groups, Nilpotent groups. Unit-III: Fundamental Theorem of Finite Abelian Groups, Permutation	04-07-2019 To 31-07-2019	15	NPTEL online courses workshop Classroom Seminar	

	Groups, Cyclic decomposition, Alternating group A_n , Unit-IV: Structure of groups, Direct product, Finitely Generated Abelian Groups, Invariants of a finite abelian group, Sylow Theorems and its applications.	01-09-2019 To 30-09-2019 01-10-2019 To 24-10-2019	15 15		
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3.Summary of Lesson Plan

Name of Teacher: D.M.Ghuge

Class

: M.Sc.II (Sem-III) Ring Theory

Sr. No.	Subject	Unit and Chapter to be covered	Date	No. of Lectures	Academic activities to be organized	No. of Test / Assignment with topic and date
1	Mathematics	Unit-I: Terminology, Rings of Continuous Functions, Matrix Rings , Polynomial Rings, Power Series Rings , Laurent Rings , Boolean Rings ,Some Special Rings ,Direct Products ,Several Variables ,Opposite Rings , Characteristic of a Ring	24-06-2019 To 20-07-2019	15	NPTEL online courses workshop Classroom	

			Seminar	
Unit-II: Definitions, Maximal Ideals, Generators, Basic Properties of Ideals , Algebra of Ideals ,Quotient Rings ,Ideals in Quotient Rings , Local Rings.	22-07-2019 To 16-08-2019	15		
Unit-III: Definitions and Basic Properties, Fundamental Theorems Endomorphism Rings Field of fractions Prime fields	19-08-2019 To 14-09-2019	15		
Unit-IV: Division in Domains, Euclidean Domains, Principal Ideal Domains, Factorization Domains, Unique Factorization Domains, Eisenstein's Criterion ,	16-09-2019 To 24-10-2019	15		

Teaching Staff

Mr. D.M.Ghuge

Department of Mathematics,
Rajarsi Shahu Mahavidyalaya,
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Principal
PRINCIPAL
Rajarsi Shahu Mahavidyalaya, Latur
(Autonomous)

Rajarshi Shahu Mahavidyalaya, Latur

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Structured Work Plan for Teaching

Second Term(Dec 2019-april 2020)

1. Details of Classes to be taught

Sr. No.	Class	Semester	Name of Asstt. Prof.	Subject	Paper
1	B.Sc.I	II	D.M.Ghuge	Mathematics	Integral Calculus
2	M.Sc.II	IV			Linear Algebra
4	M.Sc.II	IV			PDE

2. Summary of Lesson Plan

Name of Teacher: D.M.Ghuge

Class

: B.Sc.I (II- Semester) :Integral Calculus

Sr. No.	Subject	Unit and Chapter to be covered	Date	No. of Lectures	Academic activities to be organized	No. of Test / Assignment with topic and date
1	Mathematics	Unit I: Riemann Integration [20 lectures] Introduction, Partition of a, closed interval, Norm of partition, upper and lower Darboux's sums, oscillatory sum, upper and lower Riemann integrals, Riemann integrals, Darboux's theorem, Necessary and sufficient condition of Inerrability,	09-12-2019 To 11-01-2020	15	workshop Classroom Seminar	

		<p>some classes of bounded integrable functions. Riemann sum integral as the limit of sum, examples using Riemann sum, Properties of Riemann Integral and First Fundamental Theorem of Integral Calculus.</p> <p>Unit II: Improper integrals [13 Lectures]</p> <p>Finite and infinite intervals, bounded functions, proper integral, improper integral, improper integral as the limit of proper integral, test of convergence of $x=a$, general test for convergence, Cauchy's test, absolute convergence.</p> <p>Unit III: Beta and Gamma functions [12 Lectures]</p> <p>Beta functions, properties of beta function, Gamma function, convergence of gamma function, recurrence formula for gamma function, relation between beta and gamma functions (only statements), and duplication formula.</p>				
			13-01-2020 To 22-02-2020	15		
			25-02-2020 To 30-03-2020	15		

3. Summary of Lesson Plan

Name of Teacher: D.M.Ghugre

Class

: M.Sc.I (I- Semester) Linear algebra

Sr. No.	Subject	Unit and Chapter to be covered	Date	No. of Lectures	Academic activities to be organized	No. of Test / Assignment with topic and date
1	Mathematics	Unit-I:Introduction, Vector spaces, subspaces, Quotient Spaces, Linear combinations and system of linear equations, linear dependence and independence, Bases and dimension, Maximal Linear Independent Subsets. Unit-II:Linear Transformations, Null spaces, Ranges, The matrix representation of a linear transformation, Composition of linear transformations, Invertibility and Isomorphism, The change of Co-ordinate matrix, Dual spaces. Unit-III:Elementary Matrix Operations	09-12-2019 To 26-12-2019	15	NPTEL online courses workshop Classroom Seminar	
			27-12-2019 To 11-02-2020	15		
			13-01-2020			

		and elementary matrices, The rank of a matrix, System of linear equations- Theoretical Aspects, System of linear equations-Computational Aspects, Eigen values and Eigen vectors, Diagonalizability, Triangulable Operators, Invariant Subspaces, Cayley/Hamilton Theorem	To 31-01-2020	15		
		Unit-IV: Inner products and Norms, The Gram-Schmidt Orthogonalization process and orthogonal complements, the adjoint of a linear operator, Bilinear forms, Quadratic forms. Jordan Canonical form-I, Jordan Canonical form-II, The Minimal Polynomial, Rational Canonical form.	01-02-2020 To 22-02-2020	15		

3.Summary of Lesson Plan

Name of Teacher: D.M.Ghugre

Class

: M.Sc.I (Sem-II) P.D.E

Sr. No.	Subject	Unit and Chapter to be covered	Date	No. of Lectures	Academic activities to be organized	No. of Test / Assignment with topic and date
1	Mathematics	Unit-I:Introduction, Linear Equation of first order, Charpit's Method, Jacobi's Method, Quasilinear Equations, Non-Linear First Order P.D.E, General solution of higher order PDE's with constant coefficients, Special Functions - Bessel's function, Legendre's function. Unit-II:Introduction, Method of separation of variables, Classification of Second order PDE, One Dimensional Wave Equation, Laplace Equation,	09-12-2019 To 01-01-2020	15	NPTEL online courses workshop Classroom Seminar	
			02-01-2020 To 18-01-2020	15		

		Boundary Value Problems, the Cauchy's Problem	15		
		Unit-III:Dirichlet and Neumann Problem for different regions, Harnack's Theorem, Heat Conduction Problem, Duhamel's Principle	20-01-2020 To 05-02-2020	15	
		Unit-IV:Classification of P.D.E. in the case of n-variables, Families of Equipotential Surfaces, Kelvin's Inversion Theorem.	06-02-2020 To 29-02-2020		

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Teaching Staff

Mr. D.M.Ghugre

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