Academic Year: 2023-2024

Semester: M. Sc. I Semester I

Department: Microbiology (PG) Subject: Microbiology

Course Title: Paper IV-RMD20MIC11 - Research Methodology

Name of the teacher: Dr. K. K. Bhise

[Month: Ju	ly		Module/Unit:	Sub-units planned		
L					Theory	Practicals	
-	Lectures	Practicals	Total	-	-		
+	- Months A				Sub-unit	s planned	
	Month: Au	igust		Module/Unit:		Practicals	
L					Theory		
	Lectures	Practicals	Total	Unit I	Fundamentals of	Practicals of Taxonomy	
					Research methodology	and Microbial Diversity	
	12	12	24				
					i ID		
				Unit II	Interpretation and Report		
					Writing		
					and the state of the second second		
-	Month: September			Module/Unit:	Sub-units planned		
	Month: Se	eptember		Module/Onit.	Theory	Practicals	
+	12	12	24	Unit II	Report Writing	Practicals of Taxonomy	
	12				Bioinformatics	and Microbial Diversity	
				Unit III			
-	Month: O	ctober		Module/Unit:		s planned	
					Theory	Practicals	
!	12	12	24	Unit IV	Biostatistics	Practicals of Taxonomy	
						and Microbial Diversity	
	·						

Name and Signature of Teacher

GOKBLi28

Dr. K. K. Bhise



Name and Signature of HOD

Dr. G. K. Sontakke AD DEPARTMENT OF MICROBIOLOGY VIVEKANAND COLLEGE, KOLHAPUR (EMPOWERED AUTONOMOUS)

Academic Year: 2023-2024

Semester: M. Sc. II Semester III

Department: Microbiology (PG)

Subject: Microbiology

Course Title: Paper IX -CC-2412-Biostatistics, Bioinformatics And Scientific Writing

Name of the teacher: Dr. K. K. Bhise

Month: Ju	ıly		Module/Unit:	Sub-units planned		
				Theory	Practicals	
Lectures	Practicals	Total				
-	-	-				
Month: A	ugust		Module/Unit:	Sub-units pla		
	Ų			Theory		
Last			Unit I	1. Biostatistics, Basic concepts,		
Lectures	Practicals	Total		2. Collection and presentation of		
12	12	24		data		
T.				3. Descriptive statistics	Scientific Writing	
	and the second			4. Probability		
				5. Sampling methods		
			Unit II	1. Inference about populations		
			Statistical and	2. Hypothesis testing		
Month: Se	eptember		Module/Unit:	Sub-units plan		
		·		Theory	Practicals nned Practicals Practicals of Biostatistics, Bioinformatics And Scientific Writing nned Practicals of Biostatistics, Bioinformatics And Scientific Writing Biostatistics, Bioinformatics And Scientific Writing	
12	12	24	Unit II	3. Analysis of Variance		
				4. Correlation & Regression		
1:				1. Bioinformatics, databases		
		a la	Unit III	2. Applications of Bioinformatics	Scientific Writing	
		Contract St.		3. Data visualization	·	
				4. Pattern matching and sequence alignment		
				5. Modeling and Simulation		
				 6. Phylogenetic analysis 		
			Module/Unit:	Sub-units plan	ned	
Month: O	ctober		Widduic/ Onic.	Theory		
	12	24	Unit IV	1. Scientific Writing		
12	12	24	Omerv	2. Basic concepts of Scientific	Biostatistics,	
				writing		
				3. Scientific Document		
•				4. Compilation of record and		
				programme of writing		
				5. Structure of a scientific paper		
:				6. Presenting and publishing		
				research		
Na	ame and Sign	ature of	Teacher	Name and Sig	gnature of HOD	

DICBLIE

Dr. K. K. Bhise



Dr. G. K. Sontakke HEAD DEPARTMENT OF MICROBIOLOGY VIVEKANAND COLLEGE, KOLHAPUR (EMPOWERED AUTONOMOUS.

Academic Year: 2023-2024 Department: Microbiology (PG) Semester: M. Sc. I Semester II Subject: Microbiology

Course Title: PaperVII-DSE20MIC21- Medical Microbiology

Name of the teacher: Dr. K. K. Bhise

Month: Ja	nuary		Module/Unit:	Sub-units planned			
				Theory	Practicals		
Lectures	Practicals 12	Total 24	Unit I	 Virulence Attributes of microorganisms that enable them to cause disease Pathogen survival mechanisms Collection and transport of clinical specimens 	Practicals of medical microbiology		
Month . Er	hruory		Module/Unit:	Sub-units pl	anned		
Month: Fe	solualy		inounity of the	Theory	Practicals		
Lectures	Practicals	Tota 1 24	Unit II	 Bacterial Diseases Fungal Diseases 	Practicals of medical microbiology		
			Module/Unit:	Sub-units pla	anned		
Month: M	larch		Module/Unit.	Theory	Practicals		
		T	Unit III	1. Prevention and control of	Practicals of medical		
12	12	24		 diseases caused by viruses Diseases by Protozoa Pathology of AIDS and prevalence of Tuberculosis, Mycoplasma and Cryptococcus infections Special microbial metabolites and their applications in health care Sub-units pla 	microbiology		
Month: Aj	pril		Module/Unit:		Practicals		
12	12	24	Unit IV	Theory1. B and T cell immune deficiency disorders2. Complement disorders: complement component deficiency3. Rheumatic disease4. Atopic disease	Practicals Practicals of medical microbiology		
	and Signatu	re of Te	acher		Signature of HOD		
	and Signatu DICBUS Dr. K. K. Bhi	5.		Dr. G.	K. Sontakke		

JUNE

1964

"ered Auton"

DEPARTMENT OF MICROBIOLOGY

VIVEKANAND COLLEGE, KOLHAPHR

IFMPOWERED A ROMONADIT-

Academic Year: 2023-2024

Semester: M. Sc. II Semester IV

Subject: Microbiology

Department: Microbiology (PG)

Course Title: Paper XII-CC-2415-Quality Control Microbiology - I

Name of the teacher: Dr. K. K. Bhise

Month: Ju	ıly		Module/Unit:	Sub-unit	ts planned
				Theory	Practicals
Lectures	Practicals -	Total	-		-
Month: A	ugust		Module/Unit:	Sub-unit	s planned
				Theory	Practicals
Lectures	Practicals	Total	Unit I	1. Design of Basic laboratories	Practicals of quality control microbiology-I
12	12	24	Unit II	 Biosafety Levels 1 and Biosafety Levels 2 The containment laboratory – Biosafety Level 3 The maximum containment laboratory – Biosafety Level 4 Good microbiological 	
	Annabas		Module/Unit:	 Good Incrobiological techniques- Handling of specimen Use of pipette, BSC Sub-units 	splanned
Month: Se	ptember		Widduic, Onic.	Theory	Practicals
12	12	24	Unit II Unit III	 4. Opening of ampoules and storage,Standard precautions with blood and body fluids 5. Contingency grants and emergency procedures 1. Sterilization and methods 	Practicals of quality control microbiology-I
		•		2. Sterility assurance tests	
Month: Oct	tober		Module/Unit:	Sub-units	planned
!				Theory	Practicals
12	12	24	Unit IV	 Biosafety Guidelines BSC-Class I, II, III Safety equipments 	Practicals of quality control microbiology-I
Nam	ne and Signa	ature of	Feacher	Name an	d Signature of HOD
	Dr. K. K. B	8 -		LLEGER	GL

ESTD

JUNE

1964

Wered Auton

C R

HEAD

DEPARTMENT OF MICROBIOLOGY

VIVERANAND COLLEGE, KOLHAPUR

(EMPOWERED AUTONOMOUS)

Academic Year: 2023-2024

Semester: M. Sc. II Semester IV

Department: Microbiology (PG)

Subject: Microbiology

Course Title: Paper XV-CC2420-Recombinant DNA Technology

Name of the teacher: Dr. K. K. Bhise

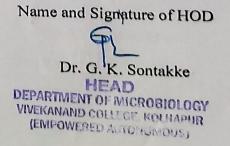
Mor	Month: January			Sub-units planned				
				Theory	Practicals			
Lectures 12	Practicals 12	Total 24	Unit I	1. Enzymes 2. Linkers and adapters 3. Cloning vectors 4. Gene probes	Practicals of recombinant DNA technology			
Mor	nth: Februar	v	Module/Unit:	Sub-units pl	anned			
Lectures	Practicals		Unit II	Theory 1. Basic Cloning Strategies-	Practicals Practicals of			
12	12	24	-	General principals 2. Cloning in <i>Escherichia coli</i>	recombinant DNA technology			
				 and other bacteria 3. Screening of gene libraries 4. Sigmoid kinetics – Hill and Adair equations 5. for co operativity 6. Expression of foreign DNA in transformed 7. Bacteria 				
M	Ionth: March	1	Module/Unit:	Sub-units pl	anned			
		1		Theory	Practicals Practicals of			
. 12	12	24	Unit III	 Cloning in yeast and fungi Cloning in animals Cloning in plant 	recombinant DNA technology			
N	Month: April		Module/Unit:	Sub-units pl	lanned			
•				Theory	Practicals			
12	12	24	Unit IV	1. Applications of rDNA Technology	Practicals of recombinant DNA technology			

Name and Signature of Teacher

DUBLIS

Dr. K. K. Bhise





Academic Year: 2023-2024

Semester: M. Sc. II Semester IV

Department: Microbiology (PG)

Subject: Microbiology

Course Title: Paper XVI-CC2421- Quality control Microbiology-II

Name of the teacher: Dr. K. K. Bhise

Month: January			Module/Unit:		
Lectures Practicals Total		Unit I	Theory Pharmaceutical Drug Regulatory Affairs	Practicals Practicals of Quality control Microbiology- II	
	nth: Februar		Module/Unit:	Sub-units Theory	Practicals
Lectures			Unit II	Cleanrooms and environmental monitoring	Practicals of Quality control Microbiology- II
12	12	24		Sub-units	planned
M	onth: March		Module/Unit:	Theory Practicals	
12	12	24	Unit III	 Bioburden determination Endotoxin and pyrogen testing 	Practicals of Quality control Microbiology- II
М	onth: April		Module/Unit:	Sub-units	Practicals
12	12	24	Unit IV	Theory 1. Quality Management Systems in Pharmaceutical Manufacturing 2. Auditing the microbiology laboratory	Practicals of Quality control Microbiology- II

Name and Signature of Teacher

Al Blies

Dr. K. K. Bhise



Name and Signature of HOD

Dr. G. K. Sontakke HEAD DEPARTMENT OF MICROBIOLOGY VIVEKANAND COLLEGE, KOLHAPUR (EMPOWERED AUTONOMOUS)

Academic Year: 2023-2024

(0)

Semester: M. Sc. I Semester I

Department: Microbiology (PG)

Subject: Microbiology

Course Title: Paper II Immunology DSC20MIC12

Name of the teacher: Dr. S. D. Mali

Month: Ju	ıly		Module/Unit:	Sub-units planned-	Sub-units planned-	
				theory	practicals	
Lectures Practicals Total		Unit I	1. MHC complex	Practicals of		
	Tracticals	Total		2. Signal	Immunology	
12	4	16	the state of the	transduction		
				3.T-cell sensitization		
Month: A	ugust		Module/Unit:	Sub-units planned-	Sub-units planned-	
			a standard i have	theory	practicals	
Lectures	Practicals	Total	Unit II	1. Complement System	Practicals of	
				2. Genetics of Ab	Immunology	
12	4	16		synthesis		
				3. Antibody diversity		
				4. Immunomodulation,		
11 1 0				5. Vaccines		
Month: S	eptember		Module/Unit:	Sub-units planned-	Sub-units planned-	
10	1			theory	practicals	
12	4	16	Unit III	1. Transplantation	Practicals of	
				immunology	Immunology	
March 0				2. Tumour immunology		
Month: C	october		Module/Unit:	Sub-units planned-	Sub-units planned-	
10				theory	practicals	
12	4	16	Unit IV	1. Serodiagnosis of	Practicals of	
				diseases	Immunology	
	Contract of the		A REAL PROPERTY OF	2. Immunochemical		
	A starting			techniques		
			•	3. PCR based		
		11 12		diagnostic tests		

Name and Signature of Teacher

Dr. S. D. Mali



Name and Signature of HOD

Dr. G. K. Sontakke HEAD DEPARTMENT OF MICROBIOLOGY VIVEKANAND COLLEGE, KOLHAPUR (EMPOWERED AUTONOMOUS)

Academic Year: 2023-2024

Semester: M. Sc. I Semester II

Department: Microbiology (PG)

Subject: Microbiology

Course Title: Paper V Microbial Physiology, Biochemistry & Metabolism DSC20MIC15

Name of the teacher: Dr. S. D. Mali

Month: Ja	anuary		Module/ Unit:	Sub-units planned-Theory	Sub-units planned- Practicals
Lectures	Total		Unit I	 Carbohydrate metabolism Oxidation of hydrocarbons 	Practicals of Microbial
12 4 16			 3.Oxidation of fatty acids and phospholipids 4. Catabolism of amino acids 5. Pasteur and Crabtree effect 6. Autotrophy 	Physiology, Biochemistry & Metabolism	
Month: February			Module/ Unit:	Sub-units planned - Theory	Sub-units planned- Practicals
Lectures Practicals Total		Unit II	 Respiratory metabolism Photo-phosphorylation 	Practicals of Microbial Physiology,	
12 4 16			 3. Drug metabolism in the body 4. Fermentation of bacteria 	Biochemistry & Metabolism	
Month: N	larch		Module/ Unit:	Sub-units planned - Theory	Sub-units planned- Practicals
12	4	16	Unit III	 Protein chemistry Biosynthesis of amino acids Lipid metabolism Phospholipid biosynthesis Purine and pyrimidine biosys. 	Practicals of Microbial Physiology, Biochemistry & Metabolism
Month: April			Module/ Unit:	Sub-units planned- Theory	Sub-units planned- Practicals
12	4	16	Unit IV	 Osmosis Permeation Biosignaling Microbial hormones and quorum sensing 	Practicals of Microbial Physiology, Biochemistry & Metabolism

Name and Signature of Teacher

Imale Dr. S. D. Mali



Name and Signature of HOD



Dr. G. K. Sontakke

HEAD DEPARTMENT OF MICROBIOLOGY VIVEKANAND COLLEGE, KOLHAPUR (EMPOWERED AUTONOMOUS)

Semester: M. Sc. II Semester III

Department: Microbiology (PG)

Academic Year: 2023-2024

Subject: Microbiology

Course Title: Paper X Enzymology & Enzyme Technology CC-2413

Name of the teacher: Dr. S. D. Mali

Month: July			Module/Unit:		
	-			Theory	Practicals Practicals of
Lectures	Practicals	Total	Unit I	1. History and properties of enzymes 2. Nomenclature and	Practicals of enzymology
12	T			 classification of enzymes 3. Specificity of enzymes: 4. Structure of enzymes 5. Methods employed to identify functional groups in the active site 6. Catabolism of amino acids 7. Co-factors in enzyme 	<u>Usus</u>
			Module/Unit:	action Theory	Practicals
Month: Au	ugust			1. Kinetics of single-	Practicals of
Lectures	Practicals	Total	Unit II	substrate enzyme catalysed reactions	enzymology
12	4	16		 Kinetics of multisubstrate reactions Haldane's relationship for reversible reactions Sigmoid kinetics – Hill &Adair equations Enzyme inhibition 	Protingly
Aanth: Son	tember		Module/Unit:	Theory	Practicals
10nth: Sep 2	4	16	Unit III	 Covalent modification of enzyme structure Ligand induced changes Multienzyme systems Membrane bound enzymes in metabolic regulation Isoenzymes 	Practicals of enzymology
			••		



Month: October				
4	2			

Name and Signature of Teacher

Small Dr. S. D. Mali

:

!

! !



Name and Signature of HOD

Dr. G. K. Sontakke

HEAD DEPARTMENT OF MICROBIOLOGY VIVEKANAND COLLEGE, KOLHAPUR (EMPOWERED AUTONOMOUS)

Academic Year: 2023-2024

Semester: M. Sc. II Semester IV

Department: Microbiology (PG)

Subject: Microbiology

Course Title: Paper XIII Food and Dairy Technology CC-2418

Name of the teacher: Dr. S. D. Mali

Month: January			Module/Unit:	Sub-units planned	
				Theory	Practicals
Lectures	Practicals	Total	Unit I	 Food as a substrate for Microorganisms General principles underlying microbial 	Practicals of Food and
12	4	16		spoilage of focd	Dairy
				3. Microbial spoilage of meat, fruits and	Technology
				vegetables	
			•.	4. Microbial spoilage of heated canned food	
				5. General principles of Preservation of food	
Month: Fe	abruary		Module/Unit:	6. Methods of food preservation	Practicals ·
Wonth. P				Theory	Practicals of
Lectures	Practicals	Total	Unit II	1. Milk: Definition, composition, Factors	Food and
10		1.6		affecting composition,	
12	4	16		Nutritive value of milk	Dairy
				 Spoilage of milk and milk products Fermented food 	Technology
Month: M	arch		Module/Unit:	Theory	Practicals
12	4	16	Unit III	1. Food born diseases	Practicals of
12	7	10	Omtm	2. Prevention and control of food borne	Food and
				diseases	Dairy
				3. Fermented dairy products and their role	Technology
		1		in controlling food borne diseases	recimology
Month: April		Module/Unit:	Theory	Practicals	
12	4	16	Unit IV	1. Probiotics	Practicals of
				2. Enzymes in food processing	Food and
				3. Applications of enzymes	Dairy
				4. Food safety and standards	Technology

Name and Signature of Teacher

Smali

Dr. S. D. Mali



Name and Signature of HOD

Dr. G. K. Sontakke

HEAD DEPARTMENT OF MICROBIOLOGY VIVEKANAND COLLEGE, KOLHAPUR (EMPOWERED AUTONOMOUS)