"Dissemination of Education for Knowledge, Science and Culture"

- Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur (Empowered Autonomous)

Department of Microbiology (UG)

Academic Year 2024-25

Sr.No	Syllabus Allotted	Syllabus Completed	Remaining Syllabus
1	B.Sc.I Sem I Paper II DSC03MIC 12: Bacteriology Unit I : A. General Principles of Microscopy : 1. Types of microscopes: B. Stains and Staining procedures 1. Definition of dye and stain 2. Classification of stains . 3. Principles, Procedure, Mechanism of staining procedures a) Monochrome staining b) Negative staining c) Differential staining : 4. Special staining methods Practical Course : I 3. Study of Laboratory instruments used in the microbiology laboratory: a)Laminar air flow, b) autoclave, incubator c)hot air oven d) colorimeter, e)colony counter f)bacteriological filter assembly 4. Study of compound microscope. 5. Catalase , Caseinase & Amylase Production test	B.Sc.I Sem I Paper II DSC03MIC 12: Bacteriology Unit I : A. General Principles of Microscopy : 1. Types of microscopes: B. Stains and Staining procedures 1. Definition of dye and stain 2. Classification of stains . 3. Principles, Procedure, Mechanism of staining procedures a) Monochrome staining b) Negative staining c) Differential staining : 4. Special staining methods Practical Course : I 3. Study of Laboratory instruments used in the microbiology laboratory: a)Laminar air flow, b) autoclave, incubator c)hot air oven d) colorimeter, e)colony counter f)bacteriological filter assembly 4. Study of compound microscope. 5. Catalase , Caseinase & Amylase Production test	NIL

Name of Teacher – Ms.V.V.Misal

VIVEKANAND COLLEGE KOLHAPUR (Empowered Autonomous) ESTD JUNE 1964

Dr.G.K. Sontakke

I/C HEAD
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Sr.No	Syllabus Allotted	Syllabus Completed	Remaining Syllabus
1 2	B.Sc.II Sem III **Paper V DSC 03MIC 21: Microbial Physiology and Metabolism** Unit I : A] **Growth :** Growth phases, measurement of growth, continuousgrowth, synchronous growth and diauxic growth B] **Effect of environmental factors on microbial growth :** i) Temperature: - i) pH ii) Osmotic pressure – Isotonic, hypotonic and hypertonicenvironments, xerophiles and halophiles. iii) Heavy metals iv) Radiations - U. V rays C] **Transport across cell membrane** : Diffusion, active transport and group translocation. Practical – 1. Micrometry. 2.Diauxic growth curve 3. Growth Curve	B.Sc.II Sem III **Paper V DSC 03MIC 21: Microbial Physiology and Metabolism** Unit I : C] **Growth :** Growth phases, measurement of growth, continuousgrowth, synchronous growth and diauxic growth D] **Effect of environmental factors on microbial growth :** i) Temperature: - v) pH vi) Osmotic pressure – Isotonic, hypotonic and hypertonicenvironments, xerophiles and halophiles. vii) Heavy metals viii) Radiations - U. V rays C] **Transport across cell membrane** : Diffusion, active transport and group translocation. Practical – 1. Micrometry. 2.Diauxic growth curve 3. Growth Curve	NIL

Name of Teacher – Ms.V.V.Misal

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Sr.No	Syllabus Allotted	Syllabus Completed	Remaining Syllabus
1	B.Sc.III Sem V Paper V DSE 1010 EI: Immunology and Medical Microbiology SEC- I Unit I 1.Cells of Immune system – 2. Membrane receptors for antigen and their role in antigen recognition 3. Molecular mechanism of antibody production. 4. Cytokines - 5. Immunological tolerance : 6. Interferon –	B.Sc.III Sem V Paper V DSE 1010 EI: Immunology and Medical Microbiology SEC- I Unit I 1.Cells of Immune system – 2. Membrane receptors for antigen and their role in antigen recognition 3. Molecular mechanism of antibody production. 4. Cytokines - 5. Immunological tolerance : 6. Interferon –	NIL
2	Unit – II 1. Complement – 2.Monoclonal antibodies - 3.New diagnostic techniques :- 4. Hypersensitivity – 5 . Autoimmune disease : Practical –II **Food and Industrial Microbiology** Bio-assay of Vitamin B12 1. Bio-assay of Penicillin. 2. Microbial testing of Water: a. Presumptive, confirmed and completed test. b. MPN 4. SPC of tomato sauce	Unit – II 1. Complement – 2.Monoclonal antibodies - 3.New diagnostic techniques :- 4. Hypersensitivity – 5 . Autoimmune disease : Practical –II **Food and Industrial Microbiology** Bio-assay of Vitamin B12 1. Bio-assay of Penicillin. 2. Microbial testing of Water: a. Presumptive, confirmed and completed test. b. MPN 4. SPC of tomato sauce	

Name of Teacher – Ms.V.V.Misal

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Department of Microbiology

Syllabus completion report 2024-2025

Name of Teacher: Mr. S. D. Gabale

Sr. No.	Theory/ Practical	Syllabus Allotted	Syllabus completed	Remaining syllabus
1.	Theory	B. Sc. I Paper I- Introduction to Microbiology **UNIT I** **A. Introduction to Microbiology** i. Spontaneous generation vs biogenesis ii. Contributions of scientists iii. Classification of microorganisms iv. Taxonomic ranks v. Beneficial and harmful activities of microorganisms **C. Bacterial systematics**	B. Sc. I Paper I- Introduction to Microbiology **UNIT I** **A. Introduction to Microbiology** i. Spontaneous generation vs biogenesis ii. Contributions of scientists iii. Classification of microorganisms iv. Taxonomic ranks v. Beneficial and harmful activities of microorganisms **C. Bacterial systematics**	**Nil**
	Practicals	1. Gram staining	1. Gram staining	**Nil**

Mr. S. D. Gabale

VIVEKANAND COLLEGE KOLHAPUR (Empowered Autonomous) ESTD JUNE 1964

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Department of Microbiology

Syllabus completion report 2024-2025

Name of Teacher: Mr. S. D. Gabale

Sr. No.	Theory/ Practical	Syllabus Allotted	Syllabus completed	Remaining syllabus
3.	Theory	**B.Sc. II** Paper VI Applied Microbiology **Unit II Applied Microbiology, Biostatistics and Bioinformatics** 1) Air Microbiology 2) Bioinstrumentation i. Electrophoresis ii. U.V. Visible spectrophotometer 3) Biostatistics i. Introduction ii. Data presentation iii. Central tendency iv. Applications 4) Bioinformatics	**B.Sc. II** Paper VI Applied Microbiology **Unit II Applied Microbiology, Biostatistics and Bioinformatics** 1) Air Microbiology 2) Bioinstrumentation i. Electrophoresis ii. U.V. Visible spectrophotometer 3) Biostatistics i. Introduction ii. Data presentation iii. Central tendency iv. Applications 4) Bioinformatics	**Nil**

	Practicals	1. Effect of pH on the growth of microorganisms 2. Effect of temperature on the growth of microorganisms 3. Effect of salt on the growth of microorganisms 4. Effect of heavy metals on the growth of microorganisms 5. Flagella staining 6. Biostatistics	1. Effect of pH on the growth of microorganisms 2. Effect of temperature on the growth of microorganisms 3. Effect of salt on the growth of microorganisms 4. Effect of heavy metals on the growth of microorganisms 5. Flagella staining 6. Biostatistics	**Nil**
	VSC Practical	1.Estimation of amino acids by Ninhydrin method	1.Estimation of amino acids by Ninhydrin method	

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Syllabus completion report 2024-2025

Name of Teacher: Mr. S. D. Gabale

Sr. No.	Theory/ Practical	Syllabus Allotted	Syllabus completed	Remaining syllabus
3.	Theory	**B.Sc. III** **Paper X** **Medical Microbiology** **Unit I** 1. *Mycobacterium leprae* 2. *Clostridium perfringens* 3. *Treponema pallidum* 4. *Pseudomonas aeruginosa* 5. *Vibrio cholera* 6. *Leptospira interrogens* 7. *Helicobacter pylori*	**B.Sc. III** **Paper X** **Medical Microbiology** **Unit I** 1. *Mycobacterium leprae* 2. *Clostridium perfringens* 3. *Treponema pallidum* 4. *Pseudomonas aeruginosa* 5. *Vibrio cholera* 6. *Leptospira interrogens* 7. *Helicobacter pylori*	**Nil**

		Unit II A. 1. *Plasmodium falciparum* 2. Hepatitis A and B virus 3. Rabies virus 4. Dengue virus 5. *Candida albicans* B. Chemotherapy C. Gene therapy D. Immunoprophylaxis	**Unit II** A. 1. *Plasmodium falciparum* 2. Hepatitis A and B virus 3. Rabies virus 4. Dengue virus 5. *Candida albicans* B. Chemotherapy C. Gene therapy D. Immunoprophylaxis	
	Practicals	1. Isolation of Auxotrophic mutants 2. Isolation of streptomycin resistant mutants of *E.coli* 3. Isolation of Chromosomal DNA 4. Agarose gel electrophoresis 5. Study of U.V. survival curve 6. Isolation of lac negative mutants of *E. coli*	1. Isolation of Auxotrophic mutants 2. Isolation of streptomycin resistant mutants of *E.coli* 3. Isolation of Chromosomal DNA 4. Agarose gel electrophoresis 5. Study of U.V. survival curve 6. Isolation of lac negative mutants of *E. coli*	**Nil**

Mr. S. D. Gabale

COLLEGE KOLHAPUR ESTD JUNE 1964 (Empowered Autonomous)

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Academic Year 2024-2025

Syllabus Completion Report

Name of Teacher – Ms.S.A.Pise

Sr.No	Syllabus Allotted	Syllabus Completed	Remaining Syllabus
1.	**B.Sc I Sem I DSC03MIC11** Introduction to Microbiology **Theory** **Unit 2 – Bacterial Cell** 1.Cell size, shape & arrangement - 2.Cytology of Bacteria - 3.Reserved Food material a.Nitrogenous b.Non nitrogenase	**B.Sc I Sem I DSC03MIC11** Introduction to Microbiology **Theory** **Unit 2 – Bacterial Cell** 1.Cell size, shape & arrangement - 2.Cytology of Bacteria - 3.Reserved Food material a.Nitrogenous b.Non nitrogenase	NIL
	Practicals – Microscopic observation of bacteria - 1. Cell wall staining	**Practicals –** Microscopic observation of bacteria - 1. Cell wall staining	NIL
2.	**B.Sc II Sem III Paper V DSC 1010C1** **Microbial Physiology & Metabolism** **Theory** **Unit III – Microbial metabolism** a.Basic concept of metabolism	**B.Sc II Sem III Paper V DSC 1010C1** **Microbial Physiology & Metabolism** **Theory** **Unit III – Microbial metabolism** a.Basic concept of metabolism	NIL

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	b.Catabolosm of Glucose – a) EMP b) HMP c) ED d) TCA c.Fementation- a) Homolactic fermentation b) Heterolactic fermentation	b.Catabolosm of Glucose – a) EMP b) HMP c) ED d) TCA c.Fementation- a) Homolactic fermentation b) Heterolactic fermentation	
	Practicals – Stains and staining procedures: i) Spore staining (Dorner's method)	**Practicals –** Stains and staining procedures: i) Spore staining (Dorner's method)	NIL
3.	**B.Sc III Sem V DSE 1010 E4** **Microbial Biochemistry** **Theory** Unit 1 -A. Enzyme a) Definition,properties,structure,specificity,classification,mechanism of action b) Allosteric enzymes c) Ribozymes d) isozymes e) Factors affecting catalytic efficiency of enzymes f) Enzyme kinetics g) Regulation of enzyme synthesis B.Extraction of enzumes C. Assay of enzymes D. Immobilization of enzymesF F.Confirmation of purified enzymes	**.Sc III Sem V DSE 1010 E4** **Microbial Biochemistry** **Theory** Unit 1 -A. Enzyme a) Definition,properties,structure,specificity,classification,mechanism of action b) Allosteric enzymes c) Ribozymes d) isozymes e) Factors affecting catalytic efficiency of enzymes f) Enzyme kinetics g) Regulation of enzyme synthesis B.Extraction of enzumes C. Assay of enzymes D. Immobilization of enzymesF F.Confirmation of purified enzymes	NIL

	Unit 2 - A.Basic concepts of – a) Glyoxylate bypass b) Phosphoketolase pathway c) Bioluminescence B. Assimilation of – a) Carbon b) Nitrogen, c) Sulfur C. Prokaryotic Synthesis of – a) DNA b) RNA c) Protein d) Peptidoglycan	Unit 2 - A.Basic concepts of – a) Glyoxylate bypass b) Phosphoketolase pathway c) Bioluminescence B. Assimilation of – d) Carbon a) Nitrogen, b) Sulfur C. Prokaryotic Synthesis of – a) DNA b) RNA c) Protein d) Peptidoglycan	
	Practicals – 1. Isolation of *Azotobacter* from soil. 2. Isolation of *Xanthomonas* from infected citrus fruits. 3. Isolation of *Rhizobium* from root nodules 4. Isolation of phosphate solubilising bacteria from soil. 5.Determination of BOD of sewage	**Practicals –** 1. Isolation of *Azotobacter* from soil. 2. Isolation of *Xanthomonas* from infected citrus fruits. 3. Isolation of *Rhizobium* from root nodules 4. Isolation of phosphate solubilising bacteria from soil. 5.Determination of BOD of sewage	NIL

Ms. S.A.Pise

VIVEKANAND COLLEGE KOLHAPUR (Empowered Autonomous) ESTD JUNE 1964

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Academic Year 2024-25

Syllabus completion report

Name of Teacher: Ms. M. M. Nadkarni

Sr. No.	Theory/ Practical	Syllabus Allotted	Syllabus completed	Remaining syllabus
3.	Theory	**B.Sc. III** **Paper XI INDUSTRIAL MICROBIOLOGY** **Unit I** 1. Food Microbiology a. Food as a substrate for microorganisms. b. Food borne diseases – I. Role of microorganisms in food borne diseases II. Food poisoning - i) Staphylococcal ii) Fungal (aflatoxin)	**B.Sc. III** **Paper XI INDUSTRIAL MICROBIOLOGY** **Unit I** 1. Food Microbiology a. Food as a substrate for microorganisms. b. Food borne diseases – I. Role of microorganisms in food borne diseases	Nil

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		III. Food infections – Salmonellosis. IV. Food spoilage and its preservation 2. Industrial Microbiology a. Strain Improvement b. Scale up of fermentations c. Microbiological assays d. Preservation of industrially important microorganisms - Methods, Culture collection centers	II. Food poisoning - i) Staphylococcal ii) Fungal (aflatoxin) III. Food infections – Salmonellosis. IV. Food spoilage and its preservation 2. Industrial Microbiology a. Strain Improvement b. Scale up of fermentations c. Microbiological assays d. Preservation of industrially important microorganisms - Methods, Culture collection centers	
	Practicals	1. Isolation of *Klebsiella pneumonia* mutants 2. Isolation of *Candida albicans* 3. Isolation of *Pseudomonas aeruginosa*	11. Isolation of *Klebsiella pneumonia* mutants 2. Isolation of *Candida albicans* 3. Isolation of *Pseudomonas aeruginosa*	**Nil**

Nadkarni

Ms. M. M. Nadkarni

VIVEKANAND COLLEGE KOLHAPUR (Empowered Autonomous) ESTD JUNE 1964

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Academic Year 2024-25

Syllabus completion report

Name of Teacher: Ms. M. M. Nadkarni

Sr. No.	Theory/ Practical	Syllabus Allotted	Syllabus completed	Remaining syllabus
3.	Theory	**B.Sc. II** **Paper VI Applied Microbiology** **Unit I Water and Food Microbiology** **A. Water Microbiology:** 1. Sources of microorganisms in water. 2. Fecal pollution of water. 3. Indicators of fecal pollution 4. Routine Bacteriological analysis of water. a. SPC b. Tests for Coli forms i) Qualitative test ii) Quantitative test –	**B.Sc. II** **Paper VI Applied Microbiology** **Unit I Water and Food Microbiology** **A. Water Microbiology:** 1. Sources of microorganisms in water. 2. Fecal pollution of water. 3. Indicators of fecal pollution 4. Routine Bacteriological analysis of water. a. SPC b. Tests for Coli forms i) Qualitative test ii) Quantitative test –	Nil

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		5. Municipal water purification process and its significance. **B. Food Microbiology** a) Principles of microbial spoilage of food b) Spoilage of fruits, breads and meat c) General principles and methods of food preservation i) Asepsis ii) Removal of microorganism – trimming, filtration, centrifugation iii)Dehydration method iv)Irradiation v) Anaerobiosis	5. Municipal water purification process and its significance. **B. Food Microbiology** a) Principles of microbial spoilage of food b) Spoilage of fruits, breads and meat c) General principles and methods of food preservation i) Asepsis ii) Removal of microorganism – trimming, filtration, centrifugation iii)Dehydration method iv)Irradiation v) Anaerobiosis	
	Practicals	1. Effect of antibiotic on the growth of microorganisms 2. Screening of antibiotic producing microorganism 3. Micrometry **VSC** **1.**Estimation of DNA by Diphenylamine method. 2. Estimation of RNA by Diphenylamine method. 3.Estimation of Protein by Diphenylamine method.	1. Effect of antibiotic on the growth of microorganisms 2. Screening of antibiotic producing microorganism 3. Micrometry. **VSC** **1.**Estimation of DNA by Diphenylamine method. 2. Estimation of RNA by Diphenylamine method. 3.Estimation of Protein by Diphenylamine method.	**Nil**

Ms. M. M. Nadkarni

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Academic Year 2024-25

Syllabus completion report

Name of Teacher: Ms. M. M. Nadkarni

Sr. No.	Theory/ Practical	Syllabus Allotted	Syllabus completed	Remaining syllabus
1.	Theory	Nil	Nil	Nil
	Practicals	1. Capsule staining	1. Capsule staining	Nil

Ms. M. M. Nadkarni

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Department of Microbiology (UG)

Syllabus Completion report 2024-25

Name of Teacher: Ms. S. S. Shaikh

Sr. No.	Theory/ Practical	Syllabus Allotted	Syllabus completed	Remaining syllabus
1.	Theory	**B. Sc. I** **Paper II: DSC03 MIC12 Industrial Microbiology** **UNIT II Control of Microorganisms** 1. Definitions 2. Mode of action and application of a) Physical agents: (i) Temperature (ii) Dessication a) Physical agents (iii) Ultrasonication (iv) Radiations (v) Filtration	**B. Sc. I** **Paper II: DSC03 MIC12 Industrial Microbiology** **UNIT II Control of Microorganisms** 1. Definitions 2. Mode of action and application of a) Physical agents: (i) Temperature (ii) Dessication a) Physical agents (iii) Ultrasonication (iv) Radiations (v) Filtration	Nil

		b) Chemical agents: (i) Phenol and phenolic compounds (ii) Alcohols b) Chemical agents: (iii) Halogen compounds (iv) Heavy metals (v) Fumigation by gaseous agents (vi) Osmotic Pressure	b) Chemical agents: (i) Phenol and phenolic compounds (ii) Alcohols b) Chemical agents: (iii) Halogen compounds (iv) Heavy metals (v) Fumigation by gaseous agents (vi) Osmotic Pressure	
	Practicals	**DSC MICRO PR-I MICROBIOLOGY LAB I** **Introduction to Microbiology and Bacteriology** 1.. Preparations of a) stains (0.5% basic fuchsin, 0.5% crystal violet), b) Reagents (phosphate buffer of pH 7, 1 N and 1M solutions of HCL and NaOH 2. Microscopic observation of bacteria: a) Monochrome staining 3. Preparation of liquid and solid culture media-. a) agar plates b) slants c) d) nutrient broth e) nutrient agar f) Sabourauds agar g) starch agar h) milk agar i) MacConkey's agar	**DSC MICRO PR-I MICROBIOLOGY LAB I** **Introduction to Microbiology and Bacteriology** 1.. Preparations of a) stains (0.5% basic fuchsin, 0.5% crystal violet), b) Reagents (phosphate buffer of pH 7, 1 N and 1M solutions of HCL and NaOH 2. Microscopic observation of bacteria: a) Monochrome staining 3. Preparation of liquid and solid culture media-. a) agar plates b) slants c) d) nutrient broth e) nutrient agar f) Sabourauds agar g) starch agar h) milk agar i) MacConkey's agar	**Nil**

		Detection of enzyme production ability of bacteria - i) Amylase ii) Catalase iii) Caseinase	Detection of enzyme production ability of bacteria - i) Amylase ii) Catalase iii) Caseinase	

Ms. S. S. Shaikh

VIVEKANAND COLLEGE KOLHAPUR (Empowered Autonomous) ESTD JUNE 1964

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Department of Microbiology (UG)

Academic Year 2024-25

Name of Teacher: Ms. S. S. Shaikh

Sr. No.	Theory/ Practical	Syllabus Allotted	Syllabus completed	Remaining syllabus
	Practicals	**BS.c II** **DSC03 MIC39 Microbiology lab 3** 1, Study of Diauxic growth 2.Stains and staining procedures: i) Nuclear staining (Giemsa's method) using Yeast cells **VSC 03 MIC39 Analytical Microbiology** 1. Preparation of molar and normal solutions of HCl and NaOH	**BS.c II** **DSC03 MIC39 Microbiology lab 3** 1, Study of Diauxic growth 2.Stains and staining procedures: i) Nuclear staining (Giemsa's method) using Yeast cells **VSC 03 MIC39 Analytical Microbiology** Preparation of molar and normal solutions of HCl and NaOH	**Nil**

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Syllabus Completion report 2024-25

Name of Teacher: Ms. S. S. Shaikh

Sr. No.	Theory/ Practical	Syllabus Allotted	Syllabus completed	Remaining syllabus
2.	Theory	**B. Sc. III** **Paper XI- DSE:1010 E3 Industrial Microbiology** **UNIT II** **1. Industrial production of -** a. Amylase production b. Grape wine Production c. Penicillin production d. Citric acid production e. SCP by using yeast **2. Microbial production of** a. Vitamins b. Amino acids **3.Probiotics** **4.Downstream processing and Product Recovery** a. Centrifugation	**B. Sc. III** **Paper XI- DSE:1010 E3 Industrial Microbiology** **UNIT II** **1. Industrial production of -** a. Amylase production b. Grape wine Production c. Penicillin production d. Citric acid production e. SCP by using yeast **2. Microbial production of** a. Vitamins b. Amino acids **3.Probiotics** **4.Downstream processing and Product Recovery** a. Centrifugation	Nil

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		b. Flocculation c. Filtration d. Solvent Extraction e. Distillation f. Precipitation g. Crystallization h. Chromatography **5.Testing of sterility, pyrogen, carcinogenicity, toxicity and allergens**	b. Flocculation c. Filtration d. Solvent Extraction e. Distillation f. Precipitation g. Crystallization h. Chromatography **5.Testing of sterility, pyrogen, carcinogenicity, toxicity and allergens**	
	Practical	**Immunology and Medical Microbiology** 1.Determination of sensitivity of common pathogens to antibiotics by paper disc method	**Immunology and Medical Microbiology** 1Determination of sensitivity of common pathogens to antibiotics by paper disc method	**Nil**

Ms. S. S. Shaikh

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Department of Microbiology

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Sr.No	Syllabus Allotted	Syllabus Completed	Remaining Syllabus
1	B.Sc.I Sem II Paper IV2DSC03MIC22: **Microbial Nutrition & Technique** **A. Microbial Nutrition :** i) Nutritional requirement of microorganism ii) Concept of auxotroph Prototroph and fastidious organisms based on growth factor. from natural environment. iii) Nutritional types of microorganism based on carbon and energy source.	B.Sc.I Sem II Paper IVDSC03MIC22: **Microbial Nutrition & Technique** **A. Microbial Nutrition :** i) Nutritional requirement of microorganism ii) Concept of auxotroph Prototroph and fastidious organisms based on growth factor. from natural environment. iii) Nutritional types of microorganism based on carbon and energy source.	NIL
2	**B. Culture Media :** i) Components of Media ii)Types of Media based on – Physical state Chemical nature Function **C. Cultivation of Microorganisms** i) Use of culture media for cultivation ii) Conditions required for growth of Microorganisms Practical – 1. Study of Staphylococcus aureus. 2. Serial dilution technique	**B. Culture Media :** i) Components of Media ii)Types of Media based on – Physical state Chemical nature Function **C. Cultivation of Microorganisms** i) Use of culture media for cultivation ii) Conditions required for growth of Microorganisms Practical – 1. Study of Staphylococcus aureus. 2. Serial dilution technique	

Name of Teacher – Ms.V.V.Misal –

VIVEKANAND COLLEGE KOLHAPUR * (Empowered Autonomous) ESTD JUNE 1964

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I/C HEAD
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Department of Microbiology

Syllabus completion report 2024- 2025

Sr.No	Syllabus Allotted	Syllabus Completed	Remaining Syllabus
1	B.Sc.II Sem IV Paper VII DSC03MIC42: Microbial Genetics and Molecular Biology A) Basic concepts of genetics – ii)Forms of DNA iii) Genetic code – iv) Organization of Chromosomal DNA in *E.coli.* B) Mutation: - i) Basic Concepts of Mutation ii) Spontaneous mutation – Definition and basic concepts. iii) Induced mutations – iv) Mutagens that distort DNA – Practical – 1. Preparation of phenyl alanine media 2. Phenyl alanine deamination test 3. Prepararion of Arginine broth 4. Arginine hydrolysis test 5. Study of *Staphylococcus aureus*	B.Sc.II Sem IV Paper VII DSC03MIC42: Microbial Genetics and Molecular Biology A) Basic concepts of genetics – ii)Forms of DNA iii) Genetic code – iv) Organization of Chromosomal DNA in *E.coli.* B) Mutation: - i) Basic Concepts of Mutation ii) Spontaneous mutation – Definition and basic concepts. iii) Induced mutations – iv) Mutagens that distort DNA – Practical – 1. Preparation of phenyl alanine media 2. Phenyl alanine deamination test 3. Prepararion of Arginine broth 4. Arginine hydrolysis test 5. Study of *Staphylococcus aureus*	NIL
2			

Name of Teacher – Ms.V.V.Misal

VIVEKANAND COLLEGE KOLHAPUR (Empowered Autonomous) ESTD JUNE 1964

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Department of Microbiology

Syllabus completion report 2024- 2025

Sr	Syllabus Allotted	Syllabus Completed	Remaining Syllabus
	B.Sc.III Sem VI Paper XIII DSE 1010 F 2 Microbial Genetics SEC- I Unit I 1. One cistron - one polypeptide hypothesis. 2. Molecular mechanism of gene expression 3. Mutations 4. Methods of isolation and detection of mutants Unit – II 1.Genetic complementation - Cis-trans test 2.Extrachromosomal inheritance: 3.Techniques in Molecular Biology – 4. Genetic engineering b. Tools of genetic engineering – c.Techniques – d. Application of genetic engineering . Practical –I **FOOD AND INDUSTRIAL MICROBIOLOGY** 1. Bio-assay of Vitamin B12 2.Bio-assay of Penicillin. 3.Citric acid fermentation, recovery and estimation by titration. 4.Amylase production by using *Bacillus* species. 5.Isolation of lactic acid bacteria from fermented food. Sauerkraut production.	B.Sc.III Sem VI Paper XIII DSE 1010 F 2 Microbial Genetics SEC- I Unit I 1. One cistron - one polypeptide hypothesis. 2. Molecular mechanism of gene expression 3. Mutations 4. Methods of isolation and detection of mutants Unit – II 1.Genetic complementation - Cis-trans test 2.Extrachromosomal inheritance: 3.Techniques in Molecular Biology – 4. Genetic engineering b. Tools of genetic engineering – c.Techniques – d. Application of genetic engineering . Practical –I **FOOD AND INDUSTRIAL MICROBIOLOGY** 1. Bio-assay of Vitamin B12 2.Bio-assay of Penicillin. 3.Citric acid fermentation, recovery and estimation by titration. 4.Amylase production by using *Bacillus* species. 5.Isolation of lactic acid bacteria from fermented food. Sauerkraut production.	NIL

Name of Teacher – Ms.V.V.Misal

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Department of Microbiology

Syllabus completion report (Term II) 2024-2025

Name of Teacher: Mr. S. D. Gabale

Sr. No.	Theory/ Practical	Syllabus Allotted	Syllabus completed	Remaining syllabus
1.	Theory	B. Sc. I 2DSC03MIC21 Basic Biochemistry-I Unit III Carbohydrates A. Monosaccharides: Classification based on aldehyde and ketone groups; structure of Ribose, Deoxyribose, Glucose, and Fructose. 2) Disaccharides: Glycosidic bond, structure of lactose and sucrose. 3) Polysaccharides: Structure of starch, glycogen and cellulose. Unit IV Lipids and nucleic acid B. Lipids: 1) Simple lipids – Fats, oils and waxes. 2) Compound lipids – Phospholipid, Glycolipids	B. Sc. I 2DSC03MIC21 Basic Biochemistry-I Unit III Carbohydrates A. Monosaccharides: Classification based on aldehyde and ketone groups; structure of Ribose, Deoxyribose, Glucose, and Fructose. 2) Disaccharides: Glycosidic bond, structure of lactose and sucrose. 3) Polysaccharides: Structure of starch, glycogen and cellulose. Unit IV Lipids and nucleic acid B. Lipids: 1) Simple lipids – Fats, oils and waxes. 2) Compound lipids – Phospholipid, Glycolipids	Nil

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		3) Derived lipids – Cholesterol **C. Nucleic Acids:** 1) DNA – Structure (Watson and Crick Model) and function. 2) RNA – Types (m-RNA, t-RNA, r-RNA), structure & functions.	3) Derived lipids – Cholesterol **C. Nucleic Acids:** 1) DNA – Structure (Watson and Crick Model) and function. 2) RNA – Types (m-RNA, t-RNA, r-RNA), structure & functions.	
	Practicals	1. Isolation of Actinomytes by slide culture technique 2. Motility of bacteria 3. Determination of standard plate count of milk	1. Isolation of Actinomytes by slide culture technique 2. Motility of bacteria 3. Determination of standard plate count of milk	Nil

Mr. S. D. Gabale

Dr. T. C. Gaupale

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Department of Microbiology

Syllabus completion report (Term II) 2024-2025

Name of Teacher: Mr. S. D. Gabale

Sr. No.	Theory/ Practical	Syllabus Allotted	Syllabus completed	Remaining syllabus
3.	Theory	B.Sc. II Paper VII DSC03 MIC41 : Medical Microbiology -I Unit III Immunology A] Immunity i) Definition ii) Innate Immunity- types, factors influencing innate immunity iii) Acquired Immunity–Active & passive B] Non-Specific defence mechanisms of the vertebrate body i) First line of defence ii) Second line of defence C] Organs of Immune System- Types of Primary and secondary lymphoid organs	B.Sc. II Paper VII DSC03 MIC41 : Medical Microbiology -I Unit III Immunology A] Immunity i) Definition ii) Innate Immunity- types, factors influencing innate immunity iii) Acquired Immunity–Active & passive B] Non-Specific defence mechanisms of the vertebrate body i) First line of defence ii) Second line of defence C] Organs of Immune System- Types of Primary and secondary lymphoid organs	Nil

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		Unit IV Antigens and Antibodies A] Antigen-Chemical nature, types of antigens, factors affecting antigenicity. B] Antibody-Structure, properties and functions, types of antibodies. C] Theories of antibody production. D] Mechanism of antigen–antibody reaction– E] Types of antigen antibody reaction-Agglutination &Precipitation. Immune Response: Primary & secondary immune responses	**Unit IV Antigens and Antibodies** A] Antigen-Chemical nature, types of antigens, factors affecting antigenicity. B] Antibody-Structure, properties and functions, types of antibodies. C] Theories of antibody production. D] Mechanism of antigen–antibody reaction– E] Types of antigen antibody reaction-Agglutination &Precipitation. Immune Response: Primary & secondary immune responses	
	Practicals	1. Oxidase test 2. Preparation of peptone nitrate broth 3. Nitrate reduction test	1. Oxidase test 2. Preparation of peptone nitrate broth 3. Nitrate reduction test	**Nil**
	VSC Practical	1. Enrichment of coliform bacteria by using MacConkeys broth 2. Determination of standard plate count of water 3. Sterilization of air by fumigation	1. Enrichment of coliform bacteria by using MacConkeys broth 2. Determination of standard plate count of water 3. Sterilization of air by fumigation	

Mr. S. D. Gabale

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Department of Microbiology

Syllabus completion report (Term II) 2024-2025

Name of Teacher: Mr. S. D. Gabale

Sr. No.	Theory/ Practical	Syllabus Allotted	Syllabus completed	Remaining syllabus
3.	Theory	**Paper XIII Virology** **Unit I** 1. a. The Structural properties of viruses: Capsids, Nucleic acids and envelope. b. Structure of T4 bacteriophage, TMV and HIV, Viroid's & prions. c. One step growth experiment. **2. Isolation, cultivation and Purification of viruses** **a. Isolation and cultivation of viruses** i. Animal virus - Tissue culture, chick embryo and live animals. ii. Plant virus –Protoplasts culture technique, Insect tissue culture iii. Bacteriophages - Plaque method.	**Paper XIII Virology** **Unit I** 1. a. The Structural properties of viruses: Capsids, Nucleic acids and envelope. b. Structure of T4 bacteriophage, TMV and HIV, Viroid's & prions. c. One step growth experiment. **2. Isolation, cultivation and Purification of viruses** **a. Isolation and cultivation of viruses** i. Animal virus - Tissue culture, chick embryo and live animals. ii. Plant virus –Protoplasts culture technique, Insect tissue culture iii. Bacteriophages - Plaque method.	Nil

		b. Purification of viruses using physico-chemical properties i. Density gradient centrifugation ii. Precipitation	**b. Purification of viruses using physico-chemical properties** i. Density gradient centrifugation ii. Precipitation	
		Unit II **1. a) Lysogeny** - Definition of lysogeny and temperate phage, types, lysogeny by lambda phage - adsorption & penetration, genetic map for lysogenic interaction, expression of λ genes, establishment of repression, maintenance of repression, integration of λ genome in host chromosome. b. Reproduction of animal viruses - Adenovirus c. Reproduction of plant viruses – TMV d. ReproductionofT4phage. **2. Oncogenesis:** a. Definition of oncogenesis b. Types of cancer c. Characteristics of cancer cells. d. Tumor suppressor genes and protooncogenes e. Hypothesis about cancer. I. Somatic mutation hypothesis II. Viral gene hypothesis	**Unit II** **1. a) Lysogeny** - Definition of lysogeny and temperate phage, types, lysogeny by lambda phage - adsorption & penetration, genetic map for lysogenic interaction, expression of λ genes, establishment of repression, maintenance of repression, integration of λ genome in host chromosome. b. Reproduction of animal viruses - Adenovirus c. Reproduction of plant viruses – TMV d. ReproductionofT4phage. **2. Oncogenesis:** a. Definition of oncogenesis b. Types of cancer c. Characteristics of cancer cells. d. Tumor suppressor genes and protooncogenes e. Hypothesis about cancer. I.	

		i. Role of DNA viruses with special emphasis on Papovaviruses. ii. Role of RNA tumor viruses iii. Provirus theory, Protovirus theory, Oncogene theory. III . Defective immunity hypothesis	Somatic mutation hypothesis II. Viral gene hypothesis i. Role of DNA viruses with special emphasis on Papovaviruses. ii. Role of RNA tumor viruses iii. Provirus theory, Protovirus theory, Oncogene theory. III . Defective immunity hypothesis	
	Practicals	1. Isolation of coliphages from sewage 2. Genetic transformation	1. Isolation of coliphages from sewage 2. Genetic transformation	Nil

Mr. S. D. Gabale

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Academic Year 2024-2025

Syllabus Completion Report

Name of Teacher – Ms.S.A.Pise

Sr.No	Syllabus Allotted	Syllabus Completed	Remaining Syllabus
1.	**B.Sc I Sem II 2DSC03MIC21** **Basic Biochemistry** **Theory** **Unit 1 – Protein** A. Proteins 1.introduction to amino acid, peptide bond 2.Types of amino acids 3Stryctural levels of protein B. Enzyme 1.Defonation & types of enzymes 2.Concept of apoenzyme, coenzyme, cofactor & active site 3.Mechanism of enzyme action	**B.Sc I Sem II 2DSC03 MIC21** **Basic Biochemistry** **Theory** **Unit 1 – Protein** A. Proteins 1.Introduction to amino acid, peptide bond 2.Types of amino acids 3Stryctural levels of protein B. Enzyme 1.Defonation & types of enzymes 2.Concept of apoenzyme, coenzyme, cofactor & active site 3.Mechanism of enzyme action	NIL

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2.	**Practicals –** Isolation of pure culture of bacteria by four quadrant streaking method & studies of colony characteristics, Gram Staining & motility of – *Escherichia coli*	**Practicals –** Isolation of pure culture of bacteria by four quadrant streaking method & studies of colony characteristics, Gram Staining & motility of – *Escherichia coli*	NIL
3	**B.Sc II Sem IV Paper VIII DSC 03 MIC 42** **Microbial Genetics - I** **Theory** **Unit -I** 1.Transfer of gene in bacteria i. Fate of Exogenote in recipient cell 2.Modes of gene transfer a. Transformation b. Conjugation c. Transduction **Unit II – DNA Repair & Plasmid** 1.DNA repair – i. Photo reactivation ii. Dark repair mechanism 2.Plasmid – i. Natural	**B.Sc II Sem IV Paper VIII DSC 03 MIC 42** **Microbial Genetics - I** **Theory** **Unit -I** 1.Transfer of gene in bacteria i. Fate of Exogenote in recipient cell 2.Modes of gene transfer a. Transformation b. Conjugation c. Transduction **Unit II – DNA Repair & Plasmid** 1.DNA repair – i. Photo reactivation ii. Dark repair mechanism 2.Plasmid – i. Natural	NIL

	iii. Phosphorous iv. Sulphur 3.Manure & Compost – I. Methods of production of i. Green manure & farm yard manure ii. City compost iii. Vermicompost II. Optimal Conditions for composting **Unit 2 –** 1.Types, production, Methods of applications & uses of - i. .Biofertilizers-*Azotobacter, Azospirillum, Rhizobium*, Phosphate solubilizing bacteria *ii.* Biopesticides – *Bacillus thuringensis , Trichoderma* 2.Biodegradation by bacteria & fungi – i. Cellulose ii. Pesticides 3. Plant pathology – i. Common symptoms produced by plant pathogens ii. Modes of transmission of plant diseases iii. Plant diseases	iii. Phosphorous iv. Sulphur 3.Manure & Compost – I. Methods of production of i. Green manure & farm yard manure ii. City compost iii. Vermicompost II. Optimal Conditions for composting **Unit 2 –** 1.Types, production, Methods of applications & uses of - i. .Biofertilizers-*Azotobacter, Azospirillum, Rhizobium*, Phosphate solubilizing bacteria *ii.* Biopesticides – *Bacillus thuringensis , Trichoderma* 2.Biodegradation by bacteria & fungi – i. Cellulose ii. Pesticides 3. Plant pathology – i. Common symptoms produced by plant pathogens ii. Modes of transmission of plant diseases iii. Plant diseases	NIL NIL

6.	**Practicals –** 1. Estimation of Calcium and Magnesium from soil (EDTA method) 2.Determination of organic carbon content of soil (Walkley and Black method) 3.Determination of COD	**Practicals –** 1. Estimation of Calcium and Magnesium from soil (EDTA method) 2.Determination of organic carbon content of soil (Walkley and Black method) 3.Determination of COD	NIL

Ms. S.A. Pise

VIVEKANAND COLLEGE KOLHAPUR (Empowered Autonomous) ESTD JUNE 1964

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Vivekanand College, Kolhapur (An Empowered Autonomous Institute)

Department of Microbiology (UG)

Academic Year 2024-25

Syllabus completion report

Name of Teacher: Ms. M. M. Nadkarni

Sr. No.	Theory/ Practical	Syllabus Allotted	Syllabus completed	Remaining syllabus
1.	Theory	Nil	Nil	Nil
2.	Practicals	1. Sugar fermentation test (Glucose & Lactose) 2. Isolation of *Bacillus spp.* 3. Isolation of *Staphylococcus aureus.*	1. Sugar fermentation test (Glucose & Lactose) 2. Isolation of *Bacillus spp.* 3. Isolation of *Staphylococcus aureus.*	Nil

Ms. M. M. Nadkarni

VIVEKANAND COLLEGE KOLHAPUR (Empowered Autonomous) ESTD JUNE 1964

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Department of Microbiology (UG)

Academic Year 2024-25

Syllabus completion report

Name of Teacher: Ms. M. M. Nadkarni

Sr. No.	Theory/ Practical	Syllabus Allotted	Syllabus completed	Remaining syllabus
1.	Theory	**B.Sc. II Paper VII Medical Microbiology** **UNIT I – Medical microbiology** A. Definitions– Host, Parasite, Saprophytes, Commensal, Infection, Etiological agent, Disease, Pathogen, Opportunistic pathogen, True pathogen, Virulence, Pathogenicity, Fomite, Incubation period, Carriers, Morbidity rate, Mortality rate, epidemiology, etiology, Prophylaxis, Antigen, Antibody, Hapten, Vaccine, Immunity.	**B.Sc. II** **Paper VII Medical Microbiology** **UNIT I – Medical microbiology** A. Definitions– Host, Parasite, Saprophytes, Commensal, Infection, Etiological agent, Disease, Pathogen, Opportunistic pathogen, True pathogen, Virulence, Pathogenicity, Fomite, Incubation period, Carriers, Morbidity rate, Mortality rate, epidemiology, etiology, Prophylaxis, Antigen, Antibody, Hapten, Vaccine, Immunity.	Nil

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		B. Virulence factors-production of endotoxins, exotoxins, enzymes, Ability to escape from phagocytosis. C. Types of infections– Chronic, acute, primary, secondary, reinfection, Iatrogenic, congenital, local, generalized, Covert, Overt, Simple, Mixed, Endogenous, Exogenous, Latent, Pyogenic, Nosocomial. D. Types of diseases– i) Epidemic–e.g. Influenza, Cholera ii) Endemic–E.g. Common cold, Typhoid iii) Pandemic–E.g. SARS, Corona iv) Sporadic–E.g. Polio E. Modes of transmission of diseases A. Air-borne transmission, B. Vehicle transmission C. Contact transmission D. Vector borne transmission F. General principles of prevention and control of microbial diseases.	**B.** Virulence factors-production of endotoxins, exotoxins, enzymes, Ability to escape from phagocytosis. **C.** Types of infections– Chronic, acute, primary, secondary, reinfection, Iatrogenic, congenital, local, generalized, Covert, Overt, Simple, Mixed, Endogenous, Exogenous, Latent, Pyogenic, Nosocomial. **D.** Types of diseases– i) Epidemic–e.g. Influenza, Cholera ii) Endemic–E.g. Common cold, Typhoid iii) Pandemic–E.g. SARS, Corona iv) Sporadic–E.g. Polio **E.** Modes of transmission of diseases **A.** Air-borne transmission, **B.** Vehicle transmission **C.** Contact transmission **D.** Vector borne transmission **F.** General principles of prevention and control of microbial diseases.	

		G. Normal flora of human body& its significance - (Flora of skin, throat, GI tract & Urogenital tract). Concept of antibiosis.	G. Normal flora of human body& its significance - (Flora of skin, throat, GI tract & Urogenital tract). Concept of antibiosis.	
2.	**Practicals**	1. To prepare Christensen's medium 2. To prepare Hugh and Leifson's medium 3. Urea hydrolysis test 4. Hugh and Leifson's test 5. Isolation and identification of *Salmonella species* from clinical sample. 6. Isolation and identification of *S. aureus* from clinical sample. 7. Determination of Blood groups –ABO and Rh. 8. Serological tests-Widal test–qualitative slide test. **VSC** **1.**Demonstration of presence of microflora in air by exposure of N.A plates to the air. 2. Sterilization of air by fumigation.	1. To prepare Christensen's medium 2. To prepare Hugh and Leifson's medium 3. Urea hydrolysis test 4. Hugh and Leifson's test 5. Isolation and identification of *Salmonella species* from clinical sample. 6. Isolation and identification of *S. aureus* from clinical sample. 7. Determination of Blood groups –ABO and Rh. 8. Serological tests-Widal test–qualitative slide test. **VSC** **1.**Demonstration of presence of microflora in air by exposure of N.A plates to the air. 2. Sterilization of air by fumigation.	**Nil**

Nadkarni

Ms. M. M. Nadkarni

VIVEKANAND COLLEGE KOLHAPUR (Empowered Autonomous) ESTD JUNE 1964

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Department of Microbiology (UG)

Academic Year 2024-25

Syllabus completion report

Name of Teacher: Ms. M. M. Nadkarni

Sr. No.	Theory/ Practical	Syllabus Allotted	Syllabus completed	Remaining syllabus
1.	Theory	**B.Sc. III** **Paper XVI Environmental Microbiology** **Unit II** **1. Biological safety in laboratory** a. Good Laboratory Practices b. Bio safety levels (BSL) **2. Environmental monitoring** a. Definition and purpose	**B.Sc. III** **Paper XVI Environmental Microbiology** **Unit II** **1. Biological safety in laboratory** a. Good Laboratory Practices b. Bio safety levels (BSL) **2. Environmental monitoring** a. Definition and purpose	**Nil**

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		b. Cleanroom- Concept, classification, prevention of contamination in clean rooms c. Routine Environmental monitoring programme in pharmaceutical industries- Air monitoring, Surface monitoring and Personnel monitoring. d. Bioburden test **3. Environmental Impact Assessment-** Concept and Brief introduction **4. Bioremediation** i. Definition ii. Types iii. Applications. **5. Bioleaching** i. Introduction ii. Microorganisms involved iii. Chemistry of Microbial leaching iv. Laboratory scale and pilot scale leaching v. In situ leaching - Slope, heap vi. Leaching of Copper and Uranium	b. Cleanroom- Concept, classification, prevention of contamination in clean rooms c. Routine Environmental monitoring programme in pharmaceutical industries- Air monitoring, Surface monitoring and Personnel monitoring. d. Bioburden test **3. Environmental Impact Assessment-** Concept and Brief introduction **4.** Bioremediation i. Definition ii. Types iii. Applications. **5. Bioleaching** i. Introduction ii. Microorganisms involved iii. Chemistry of Microbial leaching iv. Laboratory scale and pilot scale leaching **v.** In situ leaching - Slope, heap vi. Leaching of Copper and Uranium	

2.	**Practicals**	Urine analysis a. Physical and chemical examination of urine. b. Test for protein (Acetic acid test) c. Test for ketone bodies (Rothra's test) d. Test for bile salt.	Urine analysis a. Physical and chemical examination of urine. b. Test for protein (Acetic acid test) c. Test for ketone bodies (Rothra's test) d. Test for bile salt.	**Nil**

Ms. M. M. Nadkarni

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Syllabus Completion report 2024-25

Name of Teacher: Ms. S. S. Shaikh

Sr. No.	Theory/ Practical	Syllabus Allotted	Syllabus completed	Remaining syllabus
1.	Theory	**B. Sc. I** **Paper IV: 2 DSC03 MIC22 Microbial Nutrition and Techniques** **UNIT II** **A.Enrichment and Isolation Of Micro-organisms from natural environment.** 1. Pure culture techniques- a. Streak plate b. Spread plate c. pour plate 2.Isolation and Cultivation of anaerobic organisms by using media components by exclusion of air. **B.Preservation of microbial culture by-** 1.Subculturing 2.Overlaying cultures with mineral oils 3.Storage at low temperatures 4.Lyophilization. **C. Systematic study of pure cultures:** 1.Morphological Characteristics	**B. Sc. I** **Paper IV: 2 DSC03 MIC22 Microbial Nutrition and Techniques** **UNIT II** **A.Enrichment and Isolation Of Microorganisms from natural environment.** 1. Pure culture techniques- a. Streak plate b. Spread plate c. pour plate 2.Isolation and Cultivation of anaerobic organisms by using media components by exclusion of air. **B.Preservation of microbial culture by-** 1.Subculturing 2.Overlaying cultures with mineral oils 3.Storage at low temperatures 4.Lyophilization **C. Systematic study of pure cultures:** 1.Morphological Characteristics	**Nil**

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		2. Cultural Characteristics – Colony on solid media, growth in liquid media. 3. Biochemical Characteristics- i) Sugar fermentation ii) H2S gas production iii)Detection of enzyme activity- Amylase Caseinase Catalase 4. Serological characters **D. Concept of Culture collection centres.**	2. Cultural Characteristics – Colony on solid media, growth in liquid media. 3.Biochemical Characteristics- i) Sugar fermentation ii) H2S gas production iii)Detection of enzyme activity- Amylase Caseinase Catalase 4.Serological characters **D. Concept of Culture collection centres.**	

	Practicals	**DSC MICRO PR-I MICROBIOLOGY LAB II** **Introduction to Microbiology and Bacteriology** 1. Isolation of pure cultures of bacteria by four quadrant streaking method and study of Colony characteristics, Gram staining and motility of- i)*Escherichia coli.* 2. Biochemical tests: i)Detection of H2S production of ability of bacteria 3. Isolation of actinomycetes from soil by slide culture technique.	**DSC MICRO PR-I MICROBIOLOGY LAB II** **Introduction to Microbiology and Bacteriology** 2. Isolation of pure cultures of bacteria by four quadrant streaking method and study of Colony characteristics, Gram staining and motility of- i)*Escherichia coli.* 2. Biochemical tests: i)Detection of H2S production of ability of bacteria 3. Isolation of actinomycetes from soil by slide culture technique.	**Nil**

Ms. S. S. Shaikh

Dr. T. C. Gaupale

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Shri Swami Vivekanand Shikshan Sanstha's

VIVEKANAND COLLEGE, KOLHAPUR (AN EMPOWERED AUTONOMOUS INSTITUTE)

Department of Microbiology (UG)

Syllabus Completion report 2024-25

Name of Teacher: Ms. S. S. Shaikh

Sr. No.	Theory/ Practical	Syllabus Allotted	Syllabus completed	Remaining syllabus
	Practicals	**BS.c II** **DSC03 MIC49 Microbiology lab 4** 1.Preparation of media:Peptone nitrate broth, Egg-Yolk agar, Mannitol salt agar. 1.Biochemical tests: (i) Nitrate reduction test (ii) Oxidase test (iii) Lecithinase test (iv) Lipase activity 2.Isolation and identification of pathogenic microorganisms from clinical sample. (a)*Proteus* species **VSC03MIC49 Microbial Analysis of Air and Water**	**BS.c II** **DSC03 MIC49 Microbiology lab 4** 1.Preparation of media:Peptone nitrate broth, Egg-Yolk agar, Mannitol salt agar. 1.Biochemical tests: (i) Nitrate reduction test (ii) Oxidase test (iii) Lecithinase test (iv) Lipase activity 2.Isolation and identification of pathogenic microorganisms from clinical sample. (a)*Proteus* species **VSC03MIC49 Microbial Analysis of Air and Water**	**Nil**

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		2. Determination of dissolved oxygen concentration of water. 3.Total viable count of microorganisms present in water by membrane filter techniques.	2. Determination of dissolved oxygen concentration of water. 3.Total viable count of microorganisms present in water by membrane filter techniques	
		1. Detection of coliform in water by using biochemical test. (IMViC)	1. Detection of coliform in water by using biochemical test. (IMViC)	

Ms. S. S. Shaikh

Dr. T. C. Gaupale

VIVEKANAND COLLEGE KOLHAPUR (Empowered Autonomous) ESTD JUNE 1964

HC HEAD
DEPARTMENT OF MICROBIOLOGY
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Sr. No.	Theory/ Practical	Syllabus Allotted	Syllabus completed	Remaining syllabus
2.	Theory	**B. Sc. III** **Paper XVI Environmental Microbiology** **UNIT I** **1.General characteristics of waste-** a. Liquid waste - pH, electrical conductivity, COD, BOD, total solids, total dissolved solids, total suspended solids, total volatile solids, chlorides, sulphates, oil & grease. b. Solid waste- pH, electrical conductivity, total volatile solids, ash. c. Standards as per MPCB **2.Sewage Microbiology**	**B. Sc. III** **Paper XVI Environmental Microbiology** **UNIT I** **1.General characteristics of waste-** a. Liquid waste - pH, electrical conductivity, COD, BOD, total solids, total dissolved solids, total suspended solids, total volatile solids, chlorides, sulphates, oil & grease. b. Solid waste- pH, electrical conductivity, total volatile solids, ash. c. Standards as per MPCB **2.Sewage Microbiology**	**Nil**

		a. Physico-chemical and Biological characteristics b. Treatment methods- i. Physical treatment: Screening, Sedimentation ii. Biological treatment: Trickling filter, Activated sludge process, Oxidation ponds, Anaerobic digestion (Biomethanation), Septic tank. iii. Chemical treatment – Chlorination **3.Characteristics of waste generated by** a. Sugar Industry b. Dairy Industry **4. Characteristics and treatment of waste generated by Hospitals** **5.Eutrophication** a. Classification of lakes b. Sources c. Consequences d. Control	a. Physico-chemical and Biological characteristics b. Treatment methods- i. Physical treatment: Screening, Sedimentation ii. Biological treatment: Trickling filter, Activated sludge process, Oxidation ponds, Anaerobic digestion (Biomethanation), Septic tank. iii. Chemical treatment – Chlorination **3.Characteristics of waste generated by** c. Sugar Industry d. Dairy Industry **4. Characteristics and treatment of waste generated by Hospitals** **5.Eutrophication** a. Classification of lakes b. Sources c. Consequences d. Control	

	Practical	**Immunology and Medical Microbiology** 1.Serological tests: a. WIDAL test- Quantitative 2. Haematology: a. Estimation of haemoglobin by Sahli's method. b. Total and differential blood cell count.	**Immunology and Medical Microbiology** 1.Serological tests: a. WIDAL test- Quantitative 2. Haematology: a. Estimation of haemoglobin by Sahli's method. b. Total and differential blood cell count.	**Nil**

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