

## Department of Microbiology

(Establishment: 2007)

### Programme offered

Name of the Program /Course	Year of commencement	Nature of the Program/ Course
<b>B.Sc. (Microbiology)</b>	<b>2007</b>	<b>CBCS</b>

- ❖ Learning outcomes :- Pos / PSOs
- ❖ Name of department :- Microbiology
- ❖ Name of Programme :- B.Sc.
- ❖ Programme outcome :-
- ❖ **B.Sc. in Microbiology**
- ❖ After completion of program students will be able to demonstrate the basic fundamental knowledge in the field of Microbiology.
- ❖ Work in emerging area of applied branches of Microbiology
- ❖ Work in Environmental agencies .
- ❖ Work in research field of Microbiology.
- ❖ **Programme specific outcome** :-
- ❖ **Department of Microbiology**
- ❖ Microbiology course offers self-employment to students as lab technician, medical microbiology students can work as Biomedical Scientists, Food microbiologist, Clinical microbiologist , research scientist

- ❖ Understand structural organization of different microorganisms.
- ❖ Understand physiological behavior of organism
- ❖ Develop research attitude among students about new areas of Microbiology.

## Course Outcome:-

B. sc. I Microbiology (CBCS ,June- 2018)

Semester I

Paper I : DSC- 25 A Introduction to Microbiology

Paper II : DSC- 26 A Microbial Diversity

Semester II

Paper III : DSC –25 B Bacteriology

Paper IV : 26 B Microbial Biochemistry

class	Paper	Course outcome
<b>B.Sc. I CBCS June 2018</b>	<b>Paper I : DSC- 25 A Introduction to Microbiology</b>	History and Scope of Microbiology
		An overview of Scope of Microbiology
		Concept of Stains and staining procedures
		General Principles of bacterial nomenclature
		Microscopy
<b>Sem. I</b>	<b>Paper II : DSC- 26 A Microbial Diversity</b>	Introduction to types of Microorganisms :
		Concept of microbial nutrition
		Control of Microorganisms
		Nutritional types of microorganism based on carbon and

		energy sources
		Cultivation of microorganisms
<b>Sem. II</b>	<b>Paper III : DSC – 25 B Bacteriology</b>	Bacterial Cell organization
		Structure and functions of Cytoplasmic components
		Isolation of Microorganisms from natural habitats
		Systematic study of pure cultures
		Cultural characteristics
		Biochemical Characteristics
	<b>Paper IV : 26 B Microbial Biochemistry</b>	Study of Carbohydrates and lipids
		Study of nucleic acids
		Concept of Metabolism in bacteria
		Mode of ATP generation
		Concept of biomolecules

**B. sc. II Microbiology (CBCS June 2019)**

**SEMESTER III**

**Paper V : DSC- C 25 Microbial Physiology & Metabolism**

**Paper VI : DSC- C 26 : Applied Microbiology**

**SEMESTER IV**

**Paper VII : DSC- D 25 : Microbial Genetics & Molecular Biology**

**Paper VIII DSC- D 26 : Basics in Medical Microbiology & Immunology**

Class	Paper	Course outcome
<b>B.Sc. II CBCS June 2019</b>	<b>Paper V : DSC- C 25 Microbial Physiology &amp; Metabolism</b>	Microbial Physiology
		Concept of growth & Effect of environmental factors on microbial growth
		Concept of microbial metabolism
		Fundamental principles of energetics, high energy compounds
		Basic concepts of fermentation
<b>Sem. III</b>	<b>Paper VI : DSC- C 26 : Applied Microbiology</b>	Introduction to types of applied microbiology
		Air Microbiology: Sources of microorganisms in air, Sampling methods for microbial examination of air,
		Milk Microbiology: composition of Milk, examination of Milk, method of Pasteurization
		Water Microbiology: Sources, Fecal pollution of water, Routine Bacteriological analysis of water.
		Concept of industrial microbiology

Sem. IV	<b>Paper VII : DSC- D 25 : Microbial Genetics &amp; Molecular Biology</b>	Basic concepts of forms of DNA
		Basic Concepts of Mutation
		Study of plasmids
		Concept of molecular biology
		Lac operon
	<b>Paper VIII DSC- D 26 : Basics in Medical Microbiology &amp; Immunology</b>	DNA repair mechanism
		Study of Immunity
		Non Specific defense mechanisms of the vertebrate body
		Concept of medical microbiology
		Study of antigen, antibody & ag-ab reaction
Concept of immune response		

### B.sc. III Microbiology (June 2015)

#### SEMESTER V

Paper IX : Virology

Paper X : Immunology & Serology

Paper XI : Food and Industrial Microbiology

Paper XII : Agricultural Microbiology

#### SEMESTER VI

Paper XIII : Microbial Genetics

Paper XIV : Microbial Biochemistry

Paper XV : Environmental Microbiology

Paper XVI : Clinical Microbiology

class	Paper	Course Outcome
<b>B.Sc. III June 2015</b>	IX- Virology	To understand the Structural properties and structure of viruses
		Study of reproduction of Bacteriophages
		To study isolation, cultivation and Purification of viruses
		Study of oncogenesis also characteristics of cancer cells and hypothesis about cancer
	<b>Sem. V</b>	Paper X : Immunology & Serology
Study of molecular mechanism of antibody production.		
Study about Cytokines ,Stem cells, interferon and immunological tolerance		
Understand the complement and monoclonal antibody production		
Used to study Hypersensitivity and autoimmune diseases		

	Paper XI : Food and Industrial Microbiology	Ability to check Food as a substrate for microorganisms. Study of food poisoning and food infection Concept of probiotics
class	Paper	Course Outcome
<b>B.Sc. June 2015</b>	Paper XIII : Microbial Genetics	Understand the industrial production of alcohol , wine and antibiotics.
		Basic concepts of bacterial genome
		Study of Mutations
		To understand Strain Improvement ,scale up and Methods of isolation and detection of mutants
		Microbiological assay.
	Paper XII : Agricultural Microbiology	Study of generic complementation and To study downstream processes in industry
		Extragenosomal inheritance
		Study of Soil Microbiology (physical and chemical characters)
		Concept of Genetic engineering and application
		To understand Role of microorganisms in elemental cycle and
Paper XIV : Microbial Biochemistry	Study of Enzymes (properties & mechanism of action)	
	Role of microorganisms in treatment of soil	
	Study of Enzyme kinetics and Regulation of enzyme synthesis.	
	Concept of manure and Compost and method of production	
	Study of biofertilizer and biopesticide	
<b>Sem. VI</b>		Study about biodegradation and plant pathology Concept of Extraction & purification of enzymes.
		Basic concepts of metabolic pathway
		Biosynthesis of RNA, DNA, Protein
	Paper XV : Environmental Microbiology	General characteristics of waste
		Biological safety in laboratory and pharmaceutical industries
		Concept of Sewage Microbiology
		Understand Environmental monitoring
		Characteristics and treatment of waste generated
	Paper XVI : Clinical Microbiology	Concept of bioleaching
		Study of bacteria, viral, fungal diseases
		General principles of chemotherapy
		Concept of Gene therapy and Immunoprophylaxis
		Mechanism of drug resistance
	Chemoprophylaxis	

## Departmental activities (Seminars /Guest lectures / other activities)

### Other activities :-

- Blood Group Detection Camp” on the occasion of ‘Karmaveer Jayanti’.
- Organization of Scientific Rangoli Competition.
- Career Guidance.
- Guidance for various Entrance Examinations.
- Group Discussion.

### Research activities

<b>Sr. No.</b>	<b>Contents</b>	
<b>1</b>	<b>Number of research Published</b>	<b>5</b>

## Faculty:

Sr. No.	Name of the Faculty	Educational Qualification	Designation
1.	Miss. P. J. Patil	M.Sc.	Assistant Professor
2.	Miss. P. P. Pawar	M.Sc.	Assistant Professor
3.	Miss. S. T . Sathe	M.Sc.	Assistant Professor
4.	Miss. S. A. Budruk	M.Sc.	Assistant Professor