Prabhakar Patil Education Society's,

Arts, Commerce and Science College,

Veshvi-Alibag-Raigad.

Department of Microbiology

Program Outcomes

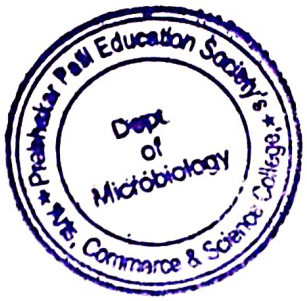
- Program took care of balancing both the basic techniques and some of the advance techniques in Microbiology.
- The concepts of Biosafety, Validation, Calibration and SOPs have been introduced to make the learners aware about :- The biological hazards and safety measures . importance of Validation and Calibration of Scientific equipments in industries and laboratories and writing of SOPs for instruments and their importance at work.
- Program have been upgraded with the new modules viz: immunology has been combined with epidemiology of infectious diseases plus diagnostic & clinical microbiology in order to make the learners aware about the spread of infection by different routes, sources of infection and functioning of the clinical microbiology laboratory.
- A course on environmental microbiology has been introduced in order to make students familiar with the biodiversity of microorganisms in different habitats/ecological niches including extreme environments and applications of these microorganisms in bioremediation, pollution control, agriculture, pharmaceuticals & biotechnology.
- The program is aimed at equipping the students with basic knowledge in various branches of Microbiology such as Microbial Genetics, Molecular Biology, Virology, Medical Microbiology, Immunology, Microbial Biochemistry and Industrial Microbiology. Additionally, it also makes students aware of interdisciplinary sciences such as Bioinformatics and Bioinstrumentation.

Programme Specific Outcome

PSO1 The program is aimed at equipping the students with basic knowledge in various branches of Microbiology such as Microbial Genetics, Molecular Biology, Virology, Medical Microbiology, Immunology, Microbial Biochemistry and Industrial Microbiology. Additionally, it also makes students aware of interdisciplinary sciences such as Bioinformatics and Bioinstrumentation

PSO2 At the end, student will have employability in food industry, pharmaceutical industry. Agricultural industry and fishery. Students will work as microbiologist in QA and production departments

PSO3 Students will develop basic understanding of the subject and will have developed life skills to solve environmental and hygiene related problem



Course Outcomes

Class: F.Y.B. Sc. Microbiology

Semester I

Course (Paper) Name and No.: Fundamentals of Microbiology-I

CO1 Learners will know the history and scope of Microbiology in industries

CO2 Learners will understand the microbial diversity

CO3 Learners will understand the prokaryotic and eukaryotic cytoskeleton and cellular structure in detail at microscopic level

CO4 Learners will understand the biochemistry of macromolecules present in cell

Course (Paper) Name and No.: Basic Techniques in Microbiology

CO1 Learners will understand the staining techniques routinely used in microbiology

CO2 Learners will learn how to handle microbial cultures while performing microbiology experiments

CO3 Learners will learn about nutritional requirements of micro organisms

CO4 Learners will understand the staining techniques routinely used in microbiology

Semester II

Course (Paper) Name and No.: Basics of Microbiology II

CO1 Learners will know about the diversity of micro-organisms.

CO2 Learners will know significance of microbes in industry and medical sciences

CO3 Learners understand the growth requirements of microbes

CO4 Learners will learn to study microbial growth using different analytical techniques

Course (Paper) Name and No.: Exploring Microbiology

CO1 Learners will know about various microbial associations found around the world

CO2 Learners can understand the various disease caused by pathogenic microbes

CO3 Learners can understand the defense system found in human against the pathogens

CO4 Learners can understand the working principle and methods of handling of microscopic instruments

Class: S.Y.B. Sc. Microbiology

Semester III

Course (Paper) Name and No.: I : Estimation of Biomolecules and nucleic acid structure and microbial taxonomy

CO1 Learners will understand the estimation of biomolecules

CO2 Learners will understand the concepts of nucleic acids structures

CO3 Learners will understand the basics of microbial taxonomy

Course (Paper) Name and No.: II: Introduction to Environmental Microbiology

CO1 Learners will learn about air microbiology

CO2 Learners will learn about fresh water and sewage treatment

CO3 Learners will learn importance of soil and geo microbiology

Course (Paper) Name and No.: III: Introduction to Clinical microbiology

CO1 Learners will learn about common infectious diseases

CO2 Learners will learn about public health awareness

CO3 Learners will learn about control of microorganisms

CO4 Learners will learn about safety in microbiology laboratory

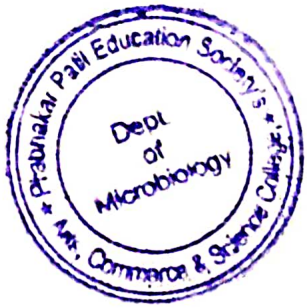
Semester IV

Course (Paper) Name and No.: I : Introduction to Metabolism and Basic analytical techniques

CO1 Learners will learn about different types of metabolic pathways

CO2 Learners will learn about enzyme kinetics

CO3 Learners will learn about basic analytical techniques



Course (Paper) Name and No.: II : Introduction to Applied Microbiology

CO1 Learners will learn about Common infectious diseases

CO2 Learners will learn about Epidemiology and Public Health Awareness

CO3 Learners will learn about food and dairy microbiology

Course (Paper) Name and No.: III: Fermented foods, food sanitation and microbial ecology

CO1 Learners will be introduced about fermented foods

CO2 Learners will learn about food sanitation

CO3 Learners will learn about microbial ecology

Class: T.Y.B. Sc. Microbiology

Semester V

Course (Paper) Name and No.: I : Microbial Genetics I

CO1 Learners will know about the DNA replication process at the molecular level

CO2 Learners will know about the gene expression mechanism in bacteria

CO3 Learners will have a better understanding in mutations

CO4 Learners will understand about exchange of genetic material among the bacteria

Course (Paper) Name and No.: II: Medical Microbiology & Immunology

CO1 Learners understand the basic mechanisms acquired by pathogens of respiratory and Urinary tract to cause infection.

CO2 Learners gain information regarding the prognosis and course of infection of skin and gastrointestinal tract.

CO3 Learners acquire knowledge of various mechanism adapted by organisms to cause infection

CO4 Learners understand the functioning of immune system

CO5 Learners acquire knowledge of diagnostic skills involved in detection of pathogens

Course (Paper) Name and No.: III: Microbial Biochemistry I

CO1 Learners will understand the mechanisms to study solute uptake by bacteria

CO2 Learners will learn Electron transport chain and ATP synthesis process

CO3 Learners will learn carbohydrate metabolism pathways

CO4 Learners will learn various fermentation pathways

Course (Paper) Name and No.:IV: Bioprocess Technology Part-I

CO1 Learners will learn about applications of microbes and its strain improvement in Industrial Microbiology.

CO2 Learners will learn to determine growth and productivity parameters of batch continuous, fed batch and solid substrate fermentations.

CO3 Learners will learn to describe the design of bioreactors for different applications and its process parameters.

CO4 Learners will learn to design media, growth conditions and techniques for producing and recovering different types of products of commercial value.

CO5 Learners will understand the importance of the containment and levels of Containment

Semester VI

Course (Paper) Name and No.: Microbial Genetics I

CO1 Learners will understand the basics of genetic engineering and molecular biology

CO2 Learners will understand the use of different tools of genetic engineering in molecular biology experiments

CO3 Learners will understand how to transform natural cell into transformed cell which can be used at commercial production of proteins

CO4 Learners will understand the regulatory mechanism found in viruses to control gene Expression

Course (Paper) Name and No.: II: Medical Microbiology & Immunology

CO1 Learners acquire knowledge of mechanism of infection of central nervous system and sexually transmitted diseases.

CO2 Learners acquire the ability to understand the application and use of antibiotics in

treatment of various infections.

CO3 Learners will understand the mechanism of immune system and formation of immune response.

Course (Paper) Name and No.: III: Microbial Biochemistry II

CO1 The course will enhance learners understanding about lipid metabolism and will enhance their employability

CO2 The course will enhance learners understanding about proteins and nucleic acid metabolism and will enhance their employability

CO3 The course will enhance learners understanding about regulation of metabolism and will develop research aptitude

CO4 The course will enhance learners understanding about metabolism of inorganic compounds and will enhance their employability

Course (Paper) Name and No.:IV: Bioprocess Technology Part II

CO1 Understand the actual process involved in fermentations of important products

CO2 Apply the knowledge of applications of animal and plant tissue culture techniques

CO3 Learn the applications of immobilized enzymes in various fields

CO4 Understand the working of important instruments used in biochemical analysis and bioassay.

CO5 Learn the salient features of quality management, regulatory procedures and IPR

CO6 Techniques involved in running a bioassay, immobilization of cells & sterility testing

CO7 Preliminary techniques in animal & plant tissue culture

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