

COURSE OBJECTIVES AND COURSE OUTCOMES

F. Y. B. Sc. SEMESTER - I

MICROBIOLOGY PAPER - II

SUBJECT: BASIC TECHNIQUES IN MICROBIOLOGY (USMB 102)

Sr. No.	Course Objectives	Course Outcomes
1)	To examine the history, principles and usage of the compound, dark field and phase contrast microscopes	Understanding the history, principle, parts of the compound microscope and their functions. Learning about other microscopes using light as the illuminating source (Dark field and Phase contrast microscopes)
2)	To use dyes and stains in microbiological applications including basic and special staining methods	Understanding the techniques of smear preparation, the principles of staining methods including monochrome, negative and differential staining and staining of different parts of the bacterial cell
3)	To discuss frequently used definitions in control of microorganisms, properties, evaluation and effectiveness of antimicrobial agents	Knowing the differences in the definitions of various antimicrobial agents, their general properties, methods of evaluating them and factors affecting their effectiveness
4)	To explain the different aspects of physical and chemical agents used for microbial control	Understanding the modes of action, advantages, disadvantages and applications of different physical and chemical agents used to control microorganisms
5)	To classify the different nutritional types of microorganisms and nutrient uptake mechanisms	Understanding the different nutritional types of microorganisms and their methods of nutrient uptake
6)	To justify isolation of microorganisms, pure culture techniques, preservation of microorganisms, and culture collection centers	Learning about the different media needed to cultivate them, methods of isolation and cultivation of microorganisms to enable their detailed study and also being able to preserve them for future use. Significance of Culture collection centers is also emphasized

COURSE OBJECTIVES AND COURSE OUTCOMES

F. Y. B. Sc. SEMESTER - II

MICROBIOLOGY PAPER - II

SUBJECT: EXPLORING MICROBIOLOGY (USMB 202)

Sr. No.	Course Objectives	Course Outcomes
1)	To categorize the different types of associations encountered between animals and microorganisms and vascular plants and microorganisms	Realizing the interdependence of plants, animals and microorganisms by studying the interactions between them like mutualism, commensalism, predation, parasitism etc.
2)	To examine the interactions between humans and microbes and the significance of germ- free animals	Acquiring a better understanding of the role played by the microflora associated with the human body by comparing with those of germ-free animals
3)	To assess the differences between infection and disease, terminologies associated with healthy and diseased conditions and microbial factors that aid the pathogen in causing an infection or disease	Understanding the differences between infection & disease and the battery of microbial factors that make a pathogen capable of causing an infection in humans
4)	To outline the various defense mechanisms which can help a human host protect itself from a pathogenic microorganism	Learning about the multiple defense mechanisms available to humans to combat pathogenic infections and reducing or eliminating the pathogen
5)	To identify advanced techniques used in study of microbiology like Electron microscope, fluorescent microscopy and confocal microscopes	Sharpening of research skills by making available information related to advanced tools like EM, Fluorescent microscope and Confocal microscope
6)	<p>To investigate the principles, use and maintenance of instruments like autoclave, hot air oven, pH meter & colorimeter which are routinely used in the microbiology laboratory, concept of validation and calibration</p> <p>To examine instruments used for protected and large-scale microbial applications including biosafety cabinets, laminar airflow systems, walk in incubators and industrial autoclaves</p>	<p>Learning the principles, applications and maintenance of instruments routinely used in the microbiology laboratory like autoclave, hot air oven, pH meter and colorimeter.</p> <p>Concepts of validation & calibration with reference to the autoclave are outlined.</p> <p>Understanding of the applications of biosafety cabinets, laminar airflows, walk in incubators and industrial autoclaves.</p>