PGDMLT-1004A: BASICS OF MICROBIOLOGY

Semester: I	
Course (subject) Code	PGDMLT-1004A
Subject Title	Basics of Microbiology
Course Type	Core Elective
Teaching Time	15×4=60 Hours
Subject Outcome	At the end of the course, the students will get knowledge of • Role of scientists in Microbial Evolution, Types of microorganisms with Bacterial Structure and Normal flora of human body along with their role • Working Principle and components of different types of microscopes. • Dyes, stains, Mordants, fixatives and intensifier including their importance and application in laboratory. • Different sterilization techniques required in Microbiology laboratory as well as characteristics and mechanism of actions of disinfectant. • Microbiological medias used for cultivation, isolation, identification and preservation of bacteria

Course Content:

Unit No.	Content	Teaching Hours
Unit-1	**Introduction of Microbiology**	**15 Hr.**
1.1	Contributions of Louis Pasteur and Robert Koch	
1.2	Bacteria: Cell Structure and Morphological Classification	
1.3	Virus: General Structure, Morphology and Characteristics	
1.4	Fungi: General Properties and Classification	
1.5	Parasite: Types and Host Parasite Relationship	
1.6	Normal Flora of Human Body	
Unit-2	**Microscopy**	**15 Hr.**
2.1	Basic Terminologies: Refraction and refractive Index, Magnification, Numerical aperture, Resolution and Resolving Power	
2.2	Principles & Components of: Light microscope Dark field microscope and Phase contrast Microscope	
2.3	Principles & Components of: Fluorescent and Electron microscope	
2.4	Importance and applications of dyes, stains, fixatives, mordent and intensifiers.	
Unit-3	**Sterilization And Disinfection**	**15 Hr.**
3.1	Definition, Principles and application	
3.2	Physical Methods of sterilization: a) Heat b) Radiation c) Filtration	
3.3	Chemical methods of sterilization: Alcohol, Phenol & Phenolic compounds, Hypochlorite, ETO, β- propionolactone	
3.4	Ideal characteristics of Disinfectants	
3.5	Mode of action of Disinfectants	
Unit-4	**Bacteriological Media for Isolation and Cultivation**	**15 Hr.**
4.1	Bacteriological media: Principle, composition and use Nutrient Agar, Mac Conkey Agar, Eosin Methylene Agar, W.B. Agar, Blood Agar, Chocolate Agar, MSA, CLED Agar, Phenyl Alanine	

	Agar, Simon's Citrate Slant, Triple Sugar Iron Agar, 1% and 2% peptone, Glucose Phosphate Broth, Urea Broth, Sugar Fermentation Broth	
4.2	Methods of Cultivation: a) Broth, slant and Stab b) Enrichment technique	
4.3	Methods of Isolation	

Reference Book:

Sr. No.	Title/ Edition	Authors	Publiser
1	Elementary Microbiology, Fundamentals of Microbiology, Vol-1	Modi H.A.	Ekta Prakashan
2	Microbiology/8th	Prescott M, Harley John P.	Mc Graw Hill
3	A text book of Microbiology and immunology/2nd	Subhash Chandra Parija	ELSEVIER
4	Mackie and McCartney Medical Microbiology. A Guide to Laboratory Diagnosis and control of Infection/13th	Mackie and McCartney	
5	Textbook of Medical Laboratory Technology /3rd	Praful B Godkar	Bhalani Publisher