To

The Principal

Sahebraoji Butte Patil Mahavidyalaya,

Rajgurunagar

Subject :- Teaching plan of F.Y.B.Sc. (Microbiology) is as follows:

FIRST TERM : PAPER I: Introduction to Microbiology

Sr. No.	Topic	Duration
1.	Frontiers of Microbiology	July 2018
2.	A. History of Microbiology I. Discovery of microscope II. Micrographia of Anton von Leeuwenhoek and Robert Hooke III. Abiogenesis v/s biogenesis • Aristotle's notion about spontaneous generation • Redi's experiment • Louis Pasteur's & Tyndall's experiments	July 2018
	B. Development of Microbiology in 19th century I. Observations and role of microorganisms in transformation of organic matter. • Germ theory of fermentation • Discovery of anaerobic life & physiological significance of fermentation II. Discovery of microbes as pathogens • Surgical antisepsis • Germ theory of disease – Koch's postulates & River's postulates C. Developments in 20thand 21st Centuries with respect to: • Vaccination and Chemotherapy • Contributions of Nobel Laureates in Immunology, Molecular Biology & Biotechnology	July 2018, August 2018
3.	Morphological and differentiating characters of microorganisms: • Bacteria • Rickettsia • Protozoa	August 2018 September 2018

	• Algae • Fungi (Molds and Yeasts) • Viruses, viroids and prions Principles in classification of Bacteria (Introduction to Bergey's Manual of Determinative and Systemic Bacteriology) and viruses (ICTV)	
4.	Applications of Microbiology: i. Significance of normal flora and probiotics in human health ii. Microbes as Biofertilizers and Biocontrol Agents (e.g. Nitrogen fixers, Phosphate Solubilizers and Bacillus thuringensis)	September 2018

FIRST TERM: PAPER II

Basic techniqyues in Microbiology

Sr. No.	Topic	Duration
1.	a. Units of measurement. Modern SI units (Length, volume, Weight) b. Microscopy : • Bright field microscopy: Structure, working of and ray diagram of a compound light microscope; Concepts of magnification, numerical aperture and resolving power. • Types, ray diagram and functions of – condensers, eye-pieces and objectives • Aberrations in lenses - spherical, chromatic, comma and astigmatism • Principles, construction, working and applications of: i. Dark field microscopy ii. Fluorescence microscopy • Confocal microscopy	July 2018 August 2018
2.	Staining Techniques : • Definitions of Stain; Types of stains (Basic and Acidic), • Properties and role of Fixatives, Mordants, Decolorisers and Accentuators • Principles of staining techniques for following: i. Monochrome staining and Negative (Relief) staining ii. Differential staining - Gram staining and Acid fast staining	July 2018
3.	Sterilization and Disinfection 1. Physical Agents - Heat, Radiation, Filtration 6 2. Chemical agents and their mode of action - Aldehydes, Halogens, Quaternary ammonium compounds, Phenol and phenolic	August 2018 September 2018

	compounds, Heavy metals, Alcohol, Dyes, Detergents and Ethylene oxide. 3. Characteristics of an ideal disinfectant 4. Checking of Efficiency of Sterilization – Biological and Chemical Indicators 5. 5. Checking of Efficiency of Disinfection - Phenol Coefficient.	

Prof. Mrs. A. A. Indais

Department of Microbiology