

**SARDAR PATEL UNIVERSITY**  
**Programme: BSC (MICROBIOLOGY)**  
**Semester: III**  
**Syllabus with effect from: June 2012**

<b>Paper Code:</b> US03CMIC01	<b>Total Credit: 3</b>
<b>Title Of Paper:</b> Fundamental Microbiology - I	

Unit	Description in detail	Weighting (%)
<b>1</b>	<p><b>History of Microbiology</b>  Discovery of Microorganisms, Spontaneous generation versus Biogenesis. Fermentation, Germ theory of disease, Laboratory techniques and pure cultures, Immunity  <b>Widening horizons:</b>  Medical microbiology, Agricultural and Industrial microbiology, Molecular biology</p>	
<b>2</b>	<p><b>Morphology and Staining</b>  Morphology of bacteria, Basic structure of Bacterial cell  <b>Stains and staining:</b>  Chemistry of dyes and stains, types of dyes, Principles of staining technique in Bacteria, Theory of staining, Steps in staining process, Role of intensifier and mordents, Role of decolorizer.  <b>Types of staining:</b>  Simple staining, Negative staining, Differential staining (Gram staining and acid fast staining), Supra vital and Intra vital staining</p>	
<b>3</b>	<p><b>Ultra structure of Bacterial cell:</b>  <b>Structure external to the cell:</b>  Flagella (Structure and function), Pili, Capsules, Sheaths. Prosthecae and stalks. Cell wall structure and chemical composition.  <b>Structure internal to the cell wall:</b>  Cytoplasmic membrane, Protoplasts and spheroplasts, Membranous intrusions and Intracellular membrane systems. The cytoplasm. Cytoplasmic inclusions and vacuoles. Nuclear material  Spores and Cysts - structure.</p>	
<b>4</b>	<p><b>Microscopic examination of microorganisms</b>  Microscopes and Microscopy, Bright field microscopy, Dark field microscopy  Fluorescence microscopy, Phase contrast microscopy, Electron microscopy - TEM &amp; SEM, Limitations of electron microscopy</p>	

**Basic Text & Reference Books:**

- Microbiology - Pelczar, Chan and Krieg, 5<sup>th</sup> Ed.
- Elementary Microbiology- H. A. Modi

