

## BS (4 Years) for Affiliated Colleges



Code	Subject Title	Cr. Hrs	Semester
<b>BOT-416</b>	<b>Microbiology (Lab.)</b>	<b>1</b>	<b>VIII</b>
Year	Discipline		
<b>4</b>	<b>BOTANY</b>		

**Syllabus Outline:** All Basic Microbial Techniques related to the Growth and Identification of Bacteria and Viruses.

**Course Outline:**

**Culture Media Preparation:** Preparation and Sterilization of Culture Media, Solid Media, Semi-Solid media, Liquid Media, Agar Slopes, Streak Plates, Pour Plates.

**Staining Techniques:** Simple Staining, Negative Staining, Gram Stain, Acid-Fast Stain, Spore Stain, Capsule Stain.

**Cultural Techniques:** Culture Transfer Techniques, Isolation of Pure Cultures, Serial Dilution-Agar Plating Procedures to Quantify Viable Cells.

**Cultivation of Bacteria:** Nutritional Requirements-Routine and Selective Media, Effect of Temperature and pH on the Growth of Bacteria, Bacterial Growth Curves.

**Biochemical Activities of Bacteria:** Starch Hydrolysis, Casein Hydrolysis Test, Oxidase, Indole Production Test, Methyl Red Test, Urease Test, Nitrate Reduction Test, Oxidation Fermentation Tests.

**Module Aims:** Knowledge and practical skills shall be acquired by the students. The course is designed to enable the students about Aseptic Handling of Microorganisms. It will also introduce the students with the Protocols and Techniques used for the study of Microorganisms.

**Learning Strategies:**

1. Lectures
2. Group Discussion
3. Laboratory Work
4. Seminar/ Workshop

**Learning Outcome:** The outcome of this framework will be that the students will be acquainted with the techniques involved in Microbiology and other related Disciplines.

**Assessment Strategies:**

1. Lecture Based Examination (Objective and Subjective)
2. Assignments
3. Class discussion
4. Quiz
5. Tests

**Books Recommended:**

1. **Pommerville, C.J. (2007).** *Alcama's Laboratory Fundamentals of Microbiology.* (8<sup>th</sup> Ed.). Elsevier Publishers.
2. **Gerhardt, P., Murray, R.G.E., Wood, W.A. and Krieg, N.R. (1994).** *Methods for General and Molecular Bacteriology.* American Society for Microbiology, Washington, DC.
3. **Cappuccino, J.G. and Sherman, N. (1992).** *Microbiology, A Laboratory Manual.* (3<sup>rd</sup> Ed.), The Benjamin / Cummings Publishing Company Inc.
4. **Jognson, T.R. and Case, C.L. (1992).** *Laboratory Experiments in Microbiology.* (3<sup>rd</sup> Ed.), The Benjamin / Cummings Publishing Company Inc.

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