

**Shiksha Mandal's**  
**Bajaj College of Science, Wardha (Autonomous)**  
**VSEC-I (VSC I) offered by Department of Microbiology**  
**B.Sc. SEM I**

**Name of the course: Elementary Microbiology**

**[4 hrs/week 15 weeks\* 4 pract = 60 P]**

**[Credits 2]**

**Course Description:** This course comprises basic practical aspects of microbiology which includes study of bacterial morphology, isolation of antibiotic and pigment producing bacteria.

**Course objective**

To provide hand's on experience of potential of variety of metabolite producing microorganisms in the laboratory.

**Course Outcome**

PO1: Students will develop practical skills of tools and techniques used to study microbiology.

PO2: Students shall gain knowledge of microbial technology and its applications in in the production of industrially important microbial products.

PO3: Students will understand the types of extracellular enzymes produced by bacteria and ferment variety or sugars.

PO4: The knowledge regarding the morphology of bacteria will be understood.

## **Practicals:**

1. Study of morphology of bacteria
2. Isolation of antibiotic producing microorganism from soil
3. Isolation of pigment producing bacteria from soil
4. Screening of urease enzymes producing bacteria
5. Screening of pectinase enzymes producing bacteria
6. Study of carbohydrate fermentation by tube method
7. Demonstration of cultivation of mushroom

## **References**

- Joanne Willey, Linda Sherwood, Chris Woolverton, Lansing Prescott, John Harley(2012) Prescott's Microbiology + Lab Exercises by Harley. 7th edition. Mc Graw Hill Publisher
- Cappuccino J.G. (2016) Microbiology; A Laboratory Manual, 11th Edition Pearson Education (Singapore) Pvt. Ltd.(ISBN: 978-9332535190)
- Aneja K.R. (2001) Experiments in Microbiology, Plant Pathology, Tissue culture and Mushroom production technology, 3rd Edition, New Age International Publishers, (ISBN: 978-9386418302)
- R C Dubey an D.K.Maheshwari (2010) Practical Microbiology. S Chand Publisher. ISBN 9788121921534
- Frank E. Berkowitz, Robert C. Jerris (2015) Practical Medical Microbiology for Clinicians. John Wiley & Sons, Inc.

**Shiksha Mandal's**

**Bajaj College of Science, Wardha (Autonomous)**

**VSEC (Skill Enhancement Course II (SEC-II) offered by Department of  
Microbiology**

**B.Sc. SEM II**

**Name of the course: Biopreservation of Perishable Foods**

**[4 hrs/week 15 weeks\* 4 pract = 60 P]**

**[Credits 2]**

**Course Description:** Chemical preservation of foods proved to be harmful and responsible for various deleterious effects on health. This course will help the students to learn about significance of biological preservation of perishable foods.

**Learning Objective:**

1. To learn food contamination and spoilage of perishable foods.
2. To learn how to preserve perishable foods using Lactic acid bacteria.

**Course Learning Outcome:** The students will learn how to preserve the perishable foods by using Lactic acid bacteria. This skill will help him/her to enter in food processing industry.

**Practicals:**

1. Isolation and identification of food borne pathogens and spoilage organisms from perishable food samples .

2. Total viable count/ml (TVC) and proteolytic organisms from perishable food samples.
3. Isolation and Identification of Lactic acid bacteria (LAB).
4. Antimicrobial activity of bacteriocinogenic LAB by agar well diffusion method.
5. Biopreservation of Meat, Fish and Poultry by viable LAB.
6. Biopreservation of Meat, Fish and Poultry by cell free supernatant (CFS)

**References :**

1. Food microbiology by Frazier, W. C. (William Carroll) Publication 1988  
Publisher New York : McGraw-Hill. Publishing company Pvt. Ltd.
2. Food Biopreservation (Springer Briefs in Food, Health, and  
Nutrition) 2014th Edition, Kindle Edition.
3. Analytical Techniques for Food Biopreservation Hardcover – 30  
November 2016 by Nguyen Minh Nhut (Editor), ISBN-13 : 978-  
1680957488, Amazon. In