

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

Name of the course: Experimental Microbiology

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

[Credits 2]

Course Description: This course comprises basic practical aspects of experimental microbiology which includes study of hanging drop technique, preparation of blood smear, determination of thermal death point and time etc.

Course objective

To give learners the hands-on practice which enrich and develop practical skill in microbiology.

Course Outcome

PO1: Students will acquire and demonstrate proficiency in good laboratory practices in microbiology laboratory.

PO2: Students shall learn about the presence of microorganisms on plant, skin, and its role in developing a sustainable environment.

PO3: Students shall acquire the awareness regarding the importance of microorganisms in plant and human health and diseases.

Practicals:

1. Hanging drop technique for demonstrating motility of bacteria
2. Preparation of blood smear and differential blood count
3. Demonstration of bacterial flora of skin
4. Evaluation of alcohol effectiveness as skin antiseptic
5. Study of phylloplane microflora by leaf impression method
6. Determination of thermal death point (TDP)
7. Determination of thermal death time (TDT)

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 (VSC-IV) offered by Department of Microbiology
B.Sc. SEM III

Name of the course: Microbiology of Wine Making

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

[Credits 2]

Course description: Wine Technology is one of the applied branches of Science. A global and local attention has already shifted to wine technology development and application. This course will help the students to learn the knowledge and techniques involved in wine making.

Learning Objectives:

- To introduce the concept of wine technology in various allied subjects
- To enrich students' knowledge in wine technology
- To help the students to build interdisciplinary approach
- To inculcate sense of scientific aspects required in wine production
- To help student's build-up a progressive and successful career as an entrepreneur

Course Learning Outcomes:

After successfully completing this course, students will be able to:

- Learn in detail about wine, different practices of wine making
- Understand in detail about Classification of wine.
- Understand methods for isolation and purification of yeast
- Understand methods for production of wine from fruits.
- Avail the opportunities in the applied fields (research, industry or institutions)

Practical's:

1. Media preparation for cultivation of yeast: liquid and solid media
2. Isolation of wine yeast from flower or fruits
3. Microscopic observation of yeast
4. Preparation of pure culture of wine yeast by Sub-culturing technique.
5. Staining of yeast cultures.
6. Production of wine from fruits.

Books and References:

- 1) Boltan R. B. (1996) Principles and practice of winemaking, Chapman and Hall.
- 2) Glaudio Delfins & Formica J. V. (2001) Wine microbiology Science and Technology.
- 3) Young J.O. (1980) Home Winemaking, Washington State University, Pullman, Washington.
- 4) Rao V.s. (1994) Principles of Weed Science, Oxford & IBH Pub.Co.Pvt.Ltd.
- 5) Patric II & Peter Gago (1997) Australian Wine from the wine to the glass. Patric II & Wine promotions Adelaide, South Australia.
- 6) James Halliday and Hough Johnson. (1992) The art & science of Wine, Mitchell Beazley International Ltd. London.
- 7) Pascal Ribereau, Denis Dubourdieu et.al (2000) Handbook of Enology I & II , Jhon Wiley and Sons, Ltd., New York.

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

Name of the course: Basic techniques in Industrial Microbiology

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

[Credits 2]

Course objective

To complement the students with isolation and screening of potent microbial strain, production of metabolites and testing of products

Course Outcomes: Students will be able to:

- Demonstrate practical skills in handling fermenter for cultivation of microorganisms and validation of autoclave
- Competent for isolation of potent microbial metabolite producers
- Familiar with fermentative production of microbial metabolites
- Gain knowledge about upstream and downstream process.

Practicals:

1. Demonstration of a typical fermenter
2. Validation of autoclave with biological indicator
3. Isolation of Halophiles
4. Screening of Actinomycetes and fungi from soil
5. Screening of antibiotic producing microbes by Crowded plate technique
6. Screening of organic acid producing microbes by Indicator dye method

References

- 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 and D.K.Maheshwari (2010) Practical Microbiology. S Chand Publisher. ISBN 9788121921534
- Harley, J. P. and Prescott L. M. (2002) Laboratory Exercises in Microbiology, 5 th edition, The McGraw-Hill Co., New York
- Benson H. (2001) Microbiological Applications Lab Manual, 8 th edition, The McGraw-Hill Companies, New York
- Gaud R.S., Gupta G. D., Gokhale S.B. (2018) Practical Biotechnology. Nirali Prakashan, Pune
- Schmauder H-P (2003) Methods in Biotechnology. Taylor & Francis Ltd