



GUJARAT UNIVERSITY
B.Sc. (Honors) Microbiology Syllabus (as per NEP)
Second Year B. Sc. Semester IV, Microbiology
Skill Enhancement Course
Effective from June-2024

Paper Code: SEC-IUC-246

Paper Name: Introduction to UV-Visible Spectroscopy and Centrifugation
Credits: 02 (02 hrs/ week, Total: 30 hrs)

Learning objectives:

- Describe basic principles of UV-Visible spectroscopy and centrifugation.
- Perform laboratory techniques for measurement of colored compounds and centrifugal separation of compounds
- Enlist applications of UV-Visible spectroscopy and centrifugation in areas of applied microbiology

Unit I Basics of UV-Visible Spectroscopy and Centrifugation **Teaching Hours: 10**

- A. Basic principle of UV-Visible spectroscopy: UV-Visible spectrum of light, Beer's law and Lambert's law, Absorbance (Optical Density), Percent transmission (%T)
- B. Introduction to component parts of colorimeter and UV-Visible spectrophotometer
- C. Applications of UV-Visible spectroscopy
- D. Basic principles of centrifugation: Centrifugal field, Angular velocity, Radial Distance, RPM and RCF
- E. Component parts of a laboratory centrifuge
- F. Applications of centrifugation

Unit II Practicals **Teaching Hours: 20**

1. Measurement of absorption maxima (λ_{max}) of aqueous solution (0.5 to 1.0%) of safranin stain
2. Colorimetric estimation of safranin
(Preparation of standard graph of safranin concentration by measuring OD of five different aliquotes of standard solution of safranin and one aliquot of unknown solution of safranin)
3. Centrifugal separation of components of soil suspension
4. Centrifugal separation of components of curd sample
5. Centrifugal separation of components of sewage sample

Text Books:

1. Keith Wilson and John Walker, (1995), Practical Biochemistry – Principles and Techniques, 4th Edition (Cambridge low price edition), Cambridge university press.
2. R. J. Patel (2008), Experimental Microbiology – Volume 1, Aditya, Ahmedabad.