

**Title of Skill Course: High-performance liquid chromatography [HPLC]
Technician**

1. Department: Department of Microbiology, **Subject:** B. Sc. II Biochemistry
2. Title: **High-performance liquid chromatography [HPLC] Technician**
3. Sector: Instrumentation
4. Year of implementation: 2024

Course Structure

Skill Level	Theory Hours	Practical Hours	Total Hours	Credits	No. of students in batch
5	15	30	45	02	30

Syllabus

Course Objectives:

1. To study working and instrumentation of instruments.
2. To understand the factors responsible for better separation.
3. To update with techniques used in industries & research.

Theory Syllabus (Contact Hrs: 15, Credits: 01)

Unit I: Chromatography I

Introduction, definition, principle & classification of chromatography; Adsorption chromatography; Column chromatography; Instrumentation of HPLC; Development of HPLC; Operation of HPLC.

Unit II: Chromatography II

Types of HPLC – Partition, Normal phase, Reverse phase, Size exclusion, Ion exchange, Bio-affinity; Elution – Isocratic, gradient; Factors responsible for better separation; Applications – Medical, Manufacturing, Research.

Practical Syllabus (Contact Hrs: 30, Credits: 01)

List of Experiments -

1. Analysis of colour compounds using TLC.
2. Analysis of non colour compounds using TLC.
3. Packaging of column with beads.
4. Packaging of column with Dowex 50.
5. Activation of resins for cation exchange.
6. Study of ion exchange by using column chromatography.
7. Introduction to HPLC instrument
8. Separation of biomolecules by using HPLC.

Case study/ Field Visit/ Industrial Visit

Course Outcomes:

1. Updated with techniques and experimental systems required in biochemical research.
2. Updated with techniques used to isolate biomolecules.
3. Updated with techniques used in present industries & research.

Reference Books: (Reference style: - Chicago style)

1. An Introduction to Practical Biochemistry-David Plummer, McGraw Hill Education, Third edition, 2017.
2. Viva and Practical Biochemistry-Dr. A. C. Deb, New central book agency (p) ltd, First edition, 2013.
3. Laboratory Manual in Biochemistry – J. Jayraman, New age international publisher, Second edition, 2011.
4. Principles and Techniques of Biochemistry and Molecular Biology - Wilson and Walker Cambridge university press, Seventh edition, 2010.

BOS Sub Committee:

Sr. No.	Name of Member	Designation	Address
1	Ms. Sonal Ramesh Inje	Chairman	Y.C.I.S Satara
2	Mrs. V. S. Patil	Member	Y.C.I.S Satara
3	Dr. S. S. Shinde	Academic Expert	Department of Material and Chemical Engineering, Hanyang University, Republic of Korea.
4	Dr. Prasad Arlulkar	Industrial Expert	Director R&D Hyper Ions Research Lab. Pvt. Ltd, Pune