

CERTIFICATE COURSE IN BIOCHEMICAL TECHNIQUES

No. of Contact Hours: 30

Hours/week: 5

Objectives of the course: To familiarize the students about the fundamental characteristics of biochemical techniques and enable them to understand how science works and to impart a general introduction to Chemistry and Biochemistry.

Course outcome: Student will be able to

- Bring out the concepts of science
- Describe the evolution and scope of biochemical techniques.
- Study the different experimental approaches to study biochemical processes.

Course Outline

Unit I. Spectrophotometry (4 hours)

Theory and Applications of Spectrophotometry, UV-Vis Spectrophotometry and Its Instrumentation

Unit II. Chromatography (8 hours)

Basic Principles of Chromatographic Techniques, Thin Layer Chromatography, Gel filtration, Ion Exchange Chromatography, Affinity Chromatography, Gas Chromatography, High Pressure Liquid Chromatography

Unit III. Immunological Techniques (4 hours)

Antibody Isolation and Purification, Radio Isotopes and Radio Immuno Assay, ELISA, ELISPOT

Unit IV. Centrifugation (5 hours)

Principles of Centrifugation, Ultracentrifugation, Procedure and Applications of Density Gradient Centrifugation

Unit V. Blotting Techniques (4 hours)

Southern Blotting, Northern Blotting, Western Blotting

Unit VI. Molecular Techniques (5 hours)

Polymerase Chain Reaction, Cloning, Cell Culture, Hybridoma Technology, The Bradford Assay.

Books and references

1. Essentials of Chemical Biology by A. Miller and J. Tanner
2. Biochemistry by Berg, Tymoczko and Stryer
3. Molecular Biology of The Cell by Bruce Alberts, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts, and Peter Walter
4. Molecular Biology of The Gene by James D. Watson, Tania A. Baker, Stephen P. Bell, Alexander Gann, Michael Levine, Richard Losic

COURSE COORDINATOR:

Dr. ABDUL RAHIM M.K., Assistant Professor, Department of Chemistry, TKM College of Arts and Science, Kollam-05

COURSE INSTRUCTORS:

1. Dr. ABDUL RAHIM M.K., Assistant Professor, Department of Chemistry, TKM College of Arts and Science, Kollam-05
2. Dr. NANDAJAN P.C., Assistant Professor, Department of Chemistry, MES College, Nedumkandam, Idukki
3. Dr. SUNEESH C.K., Research Scientist-II, Georgia Institute of Technology, Atlanta, USA
4. Dr. ANSIL P.N., Assistant Professor, Department of Biochemistry, TKM College of Arts and Science, Kollam-05