

Lecture plan for M.F. Sc Second semester (Batch- 2025)

Course – TOOLS AND TECHNIQUES IN BIOCHEMISTRY

Course code- FPB-508

credit hrs.- 3(1+2)

Theory

<i>Sl no.</i>	<i>Topic</i>	<i>No of lecture</i>
01.	Theory and application of spectrophotometry: Beer-Lambert's law; Calibration plot; UV-visual	2
02.	fluorescent, IR, CD spectroscopy	3
03.	atomic mass spectroscopy	1
04.	RTPCR and NMR, X-ray crystallography	2
05.	Basic principles of chromatography: Theory and applications of paper,	2
06.	Affinity, Column, Thin layer, Ion-exchange,	2
07.	Size exclusion and gas chromatography	2
08.	HPLC; HP-TLC;	2
09.	LC-MS; Factors affecting chromatographic resolutions, Resolving power and retention time	2
09.	Radioimmunoassay (RIA) and Enzyme-linked immunosorbent assay (ELISA):	2
10.	Basic principle and application in quantitative estimation of biological analytes; Development of assays.	2
11.	Electrophoresis: Theory and applications of electrophoresis; Gel electrophoresis of proteins and nucleic acids,	2
12.	Determination of molecular weight of proteins and nucleic acids; Electrophoretic Mobility Shift Assay (EMSA).	2
Total no of lecture		26

Practical

Sl no.	Practical	No of lecture
01.	Spectrophotometric estimation of biomolecules: Spectrum analysis,	1
02.	Validation of Beer-Lamberts law IR spectroscopy FTIR,	2
03.	NMR Isolation and purification of protein	1
04.	protein isolates and concentrate preparation	1
05	Separation of amino acids by paper chromatography	1
06	TLC separation	1
07	HPLC analysis	2
08	GC-MS analysis	2
09	Qualitative and quantitative estimation of fatty acids by gas chromatography	1
10	Isolation of plasmid	1
11	genomic DNA	1
12	Total RNA,	2
13	PCR, ,	1
14	RT-PCR and qPCR	2
15	Vertical and horizontal electrophoresis.	2
16	RIA and ELISA.	2
Total No of Practical		23



Course teacher : Dr. Showkat Ahmad Dar