Lesson Plan

Name of the Faculty : Er. Ritika Gera
Discipline : Biotechnology Engineering
Semester : 4th
Subject : Bio-analytical Techniques (Theory:BTE- 204A; Practical: BTE-214LA)
Lesson Plan Duration: 15 Weeks (From April, 2021 to Aug, 2021)

**Work Load(Lecture) per week(in hours): 3; Practical Load: 3

Week	Theory			Practical
	Lecture Day	Topic(including assignment /test)	Practical Day	Topic
1st	1st	Microscopy introduction, Light microscopy: Bright field	1	Verification of Beer-Lambert's law
	2nd	Dark field and phase contrast microscope		
	3rd	Electron microscope: Scanning electron microscope, Transmission electron		
2nd	4th	-do-	2	Separation of amino acids/ sugars by paper chromatography
	5th	Marker Enzymes		
	6th	Basic concepts of Centrifugation		
3rd	7th	Types of centrifuges	3	-do-
	8th	Differential centrifugation		
	9th	Density gradient centrifugation and Zonal centrifugation		
4th	10th	Sedimentation coefficient and applications	4	Extraction of lipids from tissues and their separation using TLC
	11th	Paper electrophoresis and Gel electrophoresis		
	12th	-do-		
5th	13th	Isoelectric focussing	5	
	14th	two-dimensional electrophoresis		
	15th	-do-		
6th	16th	Revision Test	6	Partial purification of an enzyme by ammonium sulphate fractionation
	17th	Ion-exchange Chromatography		
	18th	Gel filtration chromatography		
7th	19th	Affinity chromatography	7	-do-
	20th	Gas chromatography, High Pressure Liquid Chromatography (HPLC)		
	21st	-do-		
8th	22nd	FPLC and Hydrophobic Interaction Chromatography	8	Ion exchange chromatography of proteins

	23rd	-do-		
	24th	Spectrophotometry: UV/visible, IR		
9th	25th	**-do-**	9	-do-
	26th	NMR		
	27th	ESR		
10th	28th	Fluorescence, Raman	10	Determination of molecular weight of an enzyme by gel filtration
	29th	-do-		
	30th	LC-MS		
11th	31st	-do-	11	Separation of proteins by SDS-PAGE
	32nd	X-ray diffraction		
	33rd	CD		
12th	34th	Revision test	12	-do-
	35th	Nature of radioactivity		
	36th	Properties of α, β and γ-rays		
13th	37th	Measurement of radioactivity	13	Cell fractionation
	38th	Numerical on radioactivity		
	39th	Use of radioisotopes in research		
14th	40th	Autoradiography	14	Revision
	41st	-do-		
	42nd	Radio-immunoassay		
15th	43rd	-do-	15	Revision
	44th	Revision		
	45th	Revision		