

BS Chemistry Semester V					
Programme	BS Chemistry	Course Code	CHEM- 347	Credit Hour	1
Course Title	Basic Chromatographic Techniques (Lab)		Course Title	Major (Elective)	
Course Introduction					
Outline of this course covers basic analytical separation techniques involving different types of chromatography. It also finds its applications in various fields regarding organic and inorganic separations. Separation of ink components by paper chromatography Separation of dyes using thin layer chromatography (TLC) Separation of various amino acids by thin layer chromatography Separation of leaf pigments using column chromatography Determination of the capacity of an ion exchange resin Separation of metal ions using cation exchange chromatography Separation of cadmium and zinc using an anion exchange column Separation of anions using anion exchange chromatography Recovery of the separated bromophenol blue, congo red and phenol red using TLC/column chromatography Separation of dyes by column chromatography Separation of mixture of ink components by circular paper chromatography Separation of mixture of amino acids by circular paper chromatography					
Learning Outcomes					
On the completion of the course, the students will: 1. Analyze and interpret the results of paper, TLC, and column chromatography experiments. 2. Separate metal ions and anions using ion exchange chromatography. 3. Analyze and interpret the results of ion exchange chromatography experiments.					
Course Content			Assignments/Readings		
Week 1	Overview of chromatography principles		Collect the material from recommended books and perform experiments		
Week 2	Separation of ink components by paper chromatography		Collect the material from recommended books and perform experiments		
Week 3	Separation of dyes using thin layer chromatography		Collect the material from recommended books and perform experiments		
Week 4	Separation of various amino acids by thin layer chromatography		Collect the material from recommended books and perform experiments		
Week 5	Separation of leaf pigments using column chromatography		Collect the material from recommended books and perform experiments		
Week 6	Separation of dyes by column chromatography		Collect the material from recommended books and perform experiments		
Week 7	Recovery of the separated Bromophenol blue, congo red and phenol red using TLC/Column chromatography		Collect the material from recommended books and perform experiments		
Week 8	Mid-term assessment				

Week 9	Introduction to ion exchange chromatography	Collect the material from recommended books and perform experiments
Week 10	Determination of the capacity of an ion exchange resin	Collect the material from recommended books and perform experiments
Week 11	Separation of metal ions using cation exchange chromatography	Collect the material from recommended books and perform experiments
Week 12	Separation of cadmium and zinc using an anion exchange column	Collect the material from recommended books and perform experiments
Week 13	Separation of anions using anion exchange chromatography	Collect the material from recommended books and perform experiments
Week 14	Separation of mixture of ink components by circular paper chromatography	Collect the material from recommended books and perform experiments
Week 15	Separation of mixture of amino acids by circular paper chromatography	Collect the material from recommended books and perform experiments
Week 16	Final assessment	
Textbooks and Reading Material		
1. Vogel's text book of quantitative inorganic analysis by J. Bassett. The English language book Society and Longman 2. Introduction to chromatography by Nasir-ud-din, Published by author 3. Paper chromatography by Dr. Friedrich Cramer, London Macmilan and Co. Ltd 4. Thin-layer chromatography by Marini, Elsevier publisher		
Teaching Learning Strategies		
1. Lecturing using white/black board/Multimedia 2. Written Assignments 3. Class activities and discussion 4. Quiz about last lecture 5. Presentations		
Assignments: Types and Number with Calendar		
Assignments, quiz, Tasks, Presentation etc.		