

**Department of Science Education
Institute of Education & Research
University of the Punjab, Lahore
Course Outline**



Programme	BS Science Education (1-8)	Course Code		Credit Hours	1
Course Title	Chemistry Lab-III (Organic Chemistry Lab)				
Course Introduction					
<p>1) This course provides students with a comprehensive understanding of the fundamental principles and applications of organic Chemistry. It aims to develop their analytical and problem-solving skills by exploring topics such as Compound Analysis, aliphatic, aromatic, and heterocyclic compounds and their chemical behavior. The course also aims to strengthen analytical thinking skills essential for advanced studies in chemistry and related disciplines.</p>					
Learning Outcomes					
<p>On the completion of the course, the students will:</p> <ol style="list-style-type: none"> 1. Prepare and standardize solutions for laboratory experiments. 2. Investigate reaction kinetics and interpret experimental data. 3. Apply principles for Compound Analysis. 4. Determine physical properties like Basic Experimental techniques used in organic chemistry and Estimations (volumetric). 					
Course Content				Assignments/Readings	
Week 1	Orientation Laboratory safety protocols, chemical handling, Experimentation protocols				
Week 2	Compound Analysis Identification of organic compounds containing only one functional group with special emphasis on compounds containing following functional groups. -COOH, -OH, C=O, -NH ₂ , and -CONH ₂			Reading: K.M.Ibne Raza, M.A. Rehman, Abdur Rehman, "Organic Chemistry", The Carvan Book House, Lahore.	
Week 3	Basic Experimental techniques used in organic chemistry: introduction and demonstration			Readings: B.S. Furniss, "Vogel's T.B of Practical Organic Chemistry", Addison Wesley Longman, Inc. 1989.	
Week 4	Basic Experimental techniques used in organic chemistry Filtration			Readings: B.S. Furniss, "Vogel's T.B of Practical Organic Chemistry", Addison Wesley Longman, Inc. 1989.	

Week 5	Basic Experimental techniques used in organic chemistry Simple and fractional distillation	Reading R.L. Shriner, R.C Fuson, D.V. Curtin and T.C Morrill "The systematic identification of organic compounds, 6th ed. John Willey & sons, 1979.
Week 6	Basic Experimental techniques used in organic chemistry Solvent extraction	
Week 7	Basic Experimental techniques used in organic chemistry Sublimation	Reading Frederick George Mann and Saunder, "Practical Organic Chemistry", The English Language Book Society, 1960.
Week 8	Basic Experimental techniques used in organic chemistry Re-crystallization	
Week 9	Midterm Exam	
Week 10	Basic Experimental techniques used in organic chemistry Column Chromatography	Reading Daniel R. Palleras, "Experimental Organic Chemistry , John Willey & Sons" Inc., 2000.
Week 11	Estimations (volumetric): introduction and demonstration	
Week 12	Estimations (volumetric): Determination of molecular weight of a carboxylic acid	Readings: James A. Moore, "Experimental methods in Organic Chemistry", Holt-Saunders Int., 1983.
Week 13	Estimations (volumetric): Estimation of amide group and glucose.	Readings: James A. Moore, "Experimental methods in Organic Chemistry", Holt-Saunders Int., 1983
Week 14	Quiz	
Week 15	Revision	
Week 16	Quiz	

Textbooks and Reading Material

Textbooks.

1. K.M.Ibne Raza, M.A. Rehman, Abdur Rehman, "Organic Chemistry", The Carvan Book House, Lahore.
2. B.S. Furniss, "Vogel's T.B of Practical Organic Chemistry", Addison Wesley Longman, Inc. 1989.
3. Frederick George Mann and Saunder, "Practical Organic Chemistry", The English Language Book Society, 1960.
4. Daniel R. Palleras, "Experimental Organic Chemistry , John Willey & Sons" Inc., 2000.
5. James A. Moore, "Experimental methods in Organic Chemistry", Holt-Saunders Int., 1983.
6. R.L. Shriner, R.C Fuson, D.V. Curtin and T.C Morrill "The systematic identification of organic compounds, 6th ed. John Willey & sons, 1979.

1. Suggested Readings (Students can explore by themselves)

- 1.1. Books

- 1.2. Journal Articles/ Reports

Note:

2. It is preferable to use latest available editions of books. Mention the publisher & year of publication.
3. The References/ bibliography may be in accordance with the typing manual of the concerned faculty/subject. Preferably follow APA 7th Edition publication manual.

Teaching Learning Strategies

1. Hands-On Laboratory Experiments
2. Demonstration-Based Learning
3. Problem-Solving Sessions
4. Collaborative Group Work

Assignments: Types and Number with Calendar

Updating Practical books

Two assignments taking before mid-term and remaining two will be the part of final term.