



Course Descriptor

<CHEM182 CHEMISTRY-2 Lab>

ACADEMIC YEAR	2020-2021	SEMESTER	Spring 2021
Course Code	CHEM 182	Course Title	CHEMISTRY 2 Lab
Credit hours	1	Level of study	Undergraduate
College / Centre	Applied and Health Sciences	Department	Basic science
Pre-requisites	CHEM181	Co-requisites	CHEM102

1. COURSE OUTLINE

This is a one-semester laboratory course intended as the companion course for Chemistry 102 theory and is a lab course focusing on principles and concepts in Chemistry for students who have completed Chemistry 1. It provides the basis for further studies in physical and biological sciences, environmental sciences, various engineering disciplines, applied sciences such as food sciences and nutrition, pharmaceuticals, interdisciplinary areas like nano science and technology etc. Topics include laboratory safety, bonding in molecules, experiments on solutions, solubility and factors affecting solubility, colligative properties, colloids and emulsions, Chemical kinetics, Chemical equilibrium, pH and acid –base properties, buffer and salt hydrolysis, chromatography etc.

2. AIMS

The objective in this course is to prepare students for the advanced General Chemistry laboratory experience and to build a firm foundation in laboratory courses in chemical science. Another objective is to make the students aware of the importance of chemical analysis and to produce and analyze the results of an experiment, aimed at developing the essential laboratory skills and how to use these skills in accordance with laboratory safety procedures. It also aims to develop critical thinking, problem solving and communication skills.

3. LEARNING OUTCOMES, TEACHING, LEARNING and ASSESSMENT METHODS (Indicative)

Learning Outcomes (Definitive)	Teaching and Learning methods (Indicative)	Assessment (Indicative)
1. Use standard laboratory equipment, safety equipment, and instruments properly and demonstrate the ability to work safely in a chemical laboratory.	lectures, power point presentations lab demonstration and lab work	Mid term/Final exam
2. Observe, Record and perform measurements and calculate using the correct number of significant	demonstration, lab work, group work	quiz 1/mid-term test / Final exam



Course Descriptor

<CHEM182 CHEMISTRY-2 Lab>

figures.		
3. Understanding and experimenting solubility and factors affecting solubility	Lectures, discussions, group practical work.	Quiz/ <i>mid-term test</i> / <i>Final exam</i>
4. Analyze and critically discuss data and write a formal laboratory report.	Lab work, power point presentations, demonstration	<i>mid-term test 1/ Final exam</i>
5. Practical understanding on concepts related to colligative properties, colloids and emulsions	Lab work, demonstration	Quiz/Mid- term/ Quiz 2/ Final exam
6. Perform experiments and understanding concepts in Chemical kinetics and equilibrium.	Lab work, demonstration	Mid-tem / Final exam
7 Practical understanding on pH, acid base properties, buffer action and salt hydrolysis	Lab work, demonstration	Mid-tem/ Final exam
8. Practical understanding on the concepts in chromatography	Lab work, demonstration	Final exam

4. ASSESSMENT WEIGHTING

Assessment	Percentage of final mark (%)
Quiz	20%
Mid-term Examination	20%
Lab work & report	20%
Final Examination	40%
TOTAL	100%

5. ACHIEVING A PASS

Students will achieve **1** credit hours for this course by passing **ALL** of the course assessments] and achieving a **minimum overall score of 50%**

6. COURSE CONTENT (Indicative)

WEEK	LECTURE TOPIC	TIME (HOURS)
1	General introduction to Chemistry 2 lab & Safety in chemistry laboratories and lab equipment	3



Course Descriptor

<CHEM182 CHEMISTRY-2 Lab>

2	Geometry, hybridization and polarity – constructing molecular models	3
3	Solubility of compounds in polar and non- polar compounds & Variation of solubility with temperature, part A - KCl	3
4	Variation of solubility with temperature, part B – KNO ₃	3
5	Colloids and Emulsions	3
	Quiz 1	
6	Colligative Properties	3
7	Chemical equilibrium – part 1	3
8	Mid Term Examination	
9	Chemical equilibrium – part 2	3
10	Acids and Bases and pH	3
	Quiz 2	
10-11	1. Buffer solution and salt hydrolysis	3
	2. Titration of Vinegar	3
12	Chromatography	3
13	FINAL EXAM	3
	TOTAL HOURS	42 + 3
1 - 12	Plus RECOMMENDED INDEPENDENT STUDY HOURS	15
	TOTAL COURSE HOURS	60

7. RECOMMENDED READING

Core text/s:

Chemistry by S.S. Zumdahl and S.A. Zumdahl (9th edition), 2014 Houghton Mifflin Company, MA, USA

Moodle

Library + online resources: http://preparatorychemistry.com/Bishop_Chemistry_First.htm



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