



Course description:

An introduction to experimental chemistry, including the determination of molecular weights, calorimetry, and fundamental analytical techniques.

Aims of the course:

Upon completion of this course students should be able to

1. Learn laboratory safety rule, develop skills in the use of SI unit and operating balance.
2. Predict an empirical formula for hydrate.
3. Determine the empirical formula a compounds by combination reaction.
4. Determine the limiting reactant in a salt mixture and the percent composition of each substance in a salt mixture.
5. Experimentally identify the type of reaction occurring when two aqueous solutions are mixed.
6. Determine the molar mass of a volatile liquid.
7. determine the specific heat capacity of a metal and its approximate molar mass, and enthalpy of neutralization for strong acid-strong base reaction.
8. determine the molar mass of unknown acid by titration process and percent by mass of acetic acid in vinegar.
9. Identify the cationand anion of an unknown ionic compound.

Intended Learning Outcomes: (ILOs)

A. Knowledge and Understanding

- A1. Concepts and Theories:** students should be able to demonstrate knowledge of concepts and principles of basic chemistry.
- A2. Contemporary Trends, Problems and Research:** Apply the scientific method when faced with problems at work, study or research.
- A3. Professional Responsibility:** serve the public interest and welfare and further knowledge of science. Students majoring in health related sciences should also actively be concerned with the health and welfare of co-workers, consumers, and the community.



B. Subject-specific skills

B1. Problem solving skills: use the techniques they studied to solve report and post-report

B2. Modeling and Design: Not applicable

B3. Application of Methods and Tools: Students should be able to report their measured data to the correct number of significant figures. They also should be able to use the techniques studied to solve stoichiometry and gas law problems.

C. Critical-Thinking Skills

C1. Analytic skills: employ their knowledge of the scientific method and calculation skills to identify, and solve chemical problems.

C2. Strategic Thinking: utilize strategic thinking in solving chemistry problems which involves reviewing the exact meaning of all the terms used, considering the specific physical situation to which the problem refers, and identifying precisely what is asked for in the problem

C3. Creative thinking and innovation: apply the scientific method to approach problems

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1.Communication: ability to extract information from a variety of sources in a clear and organized manner. Students are trained to express their ideas about a topic by participating in class discussions.

D2. Teamwork and Leadership: essential part, distribution of students for groups, two students in one group.

Course structures:

Lecture	Credit Hours	ILOs	Topics	Teaching Procedure	Assessment methods
2&3	1	A1, A2, A3, B3 D2	The laboratory and the SI, Measuring Techniques and calculation.	white board/ practice exercises	Report, Mid exam final exam
4	1	A1,B1,D2	Water of Hydrates	white board demonstration	Report, Mid exam final exam
5	1	A1,B1, C1,C2 , C3,B3, D2	Empirical formula	white board, demonstration	Report, Quiz,Mid exam ,final exam
6	1	A1,B1, C1,C2, C3,B3, D1,D2	Limiting reactant	white board demonstration Periodic table	Report, Mid exam final exam
7	1	A1,B1,	Metathesis Reactions and Net	white board	Report, Quiz,



		C1,C2, C3,B3, D1,D2	Ionic Equation	demonstration	Mid exam ,final exam
8	1	A1,B1, C1,C2, C3,B3, D1,D2	Molar mass of volatile liquid	White board demonstration	Report, Mid exam final exam
9	1	A1,B1, C1,C2, C3,B3, D1,D2	Calorimetry	white board demonstration	Report, Quiz, Mid exam ,final exam
10	1	A1,B1, C1,C2, C3,B3, D1,D2	A volumetric analysis	white board demonstration	Report, Quiz, Mid exam ,final exam
11	1	A1,B1, C1,C2, C3,B3, D1,D2	Qualitative analysis of cations Ag^+ , Pb^{+2} , Hg^{2+}_2	white board demonstration	Report, Mid exam final exam
12	1	A1,B1, C1,C2, C3,B3, D1,D2	Common anions	white board demonstration	Report, Mid exam final exam

References:

A.

Main Textbook: EXPERIMENTS FOR

EVERYDAY CHEMISTRY

Sharon Lall-Ramnarine and Irina Rutenburg Pearson Custom Publishing, ISBN: 0-536-16799-0

B. Power point presentations uploaded on moodle

Assessment Methods:

Methods	Grade	Date
Mid Term	30%	
Reports	20%	
Participation, quizzes and attendance	10%	
Final Exam	40%	
Total	100%	

