



Philadelphia University
Faculty of Science
Department of Basic Science and Mathematics
Second semester, 2018/2019

<u>Course Syllabus</u>	
Course Title: General Chemistry laboratory	Course code: 0212102
Course Level: 1 st year	Course prerequisite/Co-requisite: 0212101
Lecture Time:	Credit hours: 1
Location:	Contact hours: 3

<u>Academic Staff Specifics</u>				
Name	Rank	Office number and location	Office hours	E-mail address

Course module description:

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This course includes experimental study of Safety and laboratory rules, measurements and techniques in studying the matter; density, melting point, freezing point, stoichiometry, and determination of empirical formulas, qualitative analysis, volumetric analysis, and specific heat. This course includes experimental study of basic principles and techniques of chemistry such as states of matter, determination of formulas and molecular weights, simple volumetric and gravimetric analysis, heats of reaction, stoichiometry, equilibrium and qualitative analysis.

Course module objectives:

This course provides the student with the following skills in laboratory exercises.

Chemistry is an experimental science developed from countless observations of chemical phenomena. The purpose of the teaching laboratory is three- fold:

- To expose the students to chemical phenomena through experimentations.
- To develop the student's laboratory skills through laboratory techniques.
- To instill safe handling of chemicals through good safety practices.
- Safe lab practices

- Proper handling of reagents
- Notebook skills (data acquisition and data handling)

Specific techniques

- Preparation of Solutions
- Titrations

Course/ module components

General Chemistry Sheets.

Teaching methods:

Lecture, lecture activities, laboratory experimentation, homework assignments, quizzes, and laboratory report assignments

Learning outcomes:

- **Knowledge and understanding**

Students will gain an understanding of:

- the use of an analytical balance for mass measurement
- the use of graduated cylinders, graduated pipettes, and volumetric pipettes for volumetric measurement
- the use of thermometers
- physical properties such as; density, melting point, freezing points
- titrations
- the methods for preparation solution
- the methods to measure concentrations of an acid-base

- **Cognitive skills (thinking and analysis).**

- Identify and solve problems in experiments.
- Work with given experimental information and handle basic calculations based on theory concepts.

- **Communication skills (personal and academic).**

- The student will learn professionalism, including the ability to work in teams and apply basic ethical principles.
- The student will develop the ability to effectively communicate scientific information and experimental results in written formats

- **Practical and subject specific skills (Transferable Skills).**

- Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific problems.

- Gaining knowledge and experience of working with relevant modern laboratory equipment.

Assessment instruments

- Quizzes.
- Midterm and final exam
- Lab work evaluation
- Lab Reports

Allocation of Marks	
Assessment Instruments	Mark
Mid- term examination	30
Final examination	40
Quizzes	10
Reports	10
Evaluation	10
Total	100

Course/module academic calendar

Experiment Number	Basic and support material to be covered Experiment Name	Week Numbers
1	Safety Rules & Laboratory Techniques	Week 2 4-8)/03/2018(
2	Techniques and Measurements	Week 3 (11-15)/03/2018
3	Formula of a Hydrate	Week 4 18-22)/03/2018(
4	Empirical Formula of Magnesium Chloride	Week 5 25-29)/03/2018(
5	Limiting Reactant	Week 6 1-5)/04/2018(
6	Properties of Solutions	Week 7 8-12)/04/2018(
	Midterm Exam
7	Ionization of Acids, Bases and Salts	Week 8 22-26)/04/2018(
8	Acid – Base titration	Week 9 29/4 -3/5)/2018(
9	Determination of Acetic Acid in Vinegar	Week 10 6-10)/05/2018(
10	Back Titration for Calcium Carbonate	Week 11 13-17)/5/2018(
11	Specific Heat for Metals	Week 12 20-24)/5/2018(
12	Chemical Reactions: Single & Double Replacement	Week 13 27-31)/5/2018(
	Final Exam	-----

Expected workload:

On average students need to spend 1 hour of study and preparation for each experimental Lab.

Evaluation:

Evaluation will occur through the administration of assessment modes including: weekly quizzes, assessing overall preparation, midterm and final exams. Evaluation modes include the graded laboratory notebook, reports and technique performance. Technique performance includes assessment of safety practice

Attendance policy:

Absence from lectures and/or tutorials shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse acceptable to and approved by the Dean of the relevant college/faculty shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course

Module references

Books:

1. Title: General Chemistry, The essential concepts, 6th edition. Author: Raymond Chang. Publisher: Mc. Graw Hill 2011 ISBN: 978-007-131368-1
2. Title: Experiments in General Chemistry Featuring Measurement Guided Inquiry, Self Directed, and Capstone. Second Edition. Authors: Bobby Stanton (University of Georgia), Lin Zhu (Indiana University), Purdue (University at Indianapolis), Charles H. Atwood (University of Georgia)
3. Quantitative Chemical Analysis , By Daniel C. Harris, 7th edition 2007, W. H. Freeman and Company.
ISBN 0716728818

Websites

<http://101science.com/>