



## Course Descriptor CHEM101 Chemistry I

<b>Proposed Academic Year</b>	2021/2022	<b>Last Reviewed Academic Year</b>	2020/2021
<b>Course Code</b>	CHEM181	<b>Course Title</b>	Chemistry I Lab
<b>Credit hours</b>	1	<b>Level of study</b>	Undergraduate
<b>College / Centre</b>	College of Health and Applied Sciences	<b>Department</b>	Basic science
<b>Co-requisites</b>	CHEM101	<b>Pre-requisites</b>	-

### 1. COURSE OUTLINE

This is a one-semester laboratory course intended as the companion course for Chemistry 101 theory and is an introductory lab course focusing on basic principles and concepts in Chemistry. 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, geology and metallurgy, pharmaceuticals, interdisciplinary areas like nano science and technology etc. Topics include laboratory safety, chemical measurements, significant figures, laboratory techniques, naming and chemical formulae of compounds, chemical reactions - acid –base titrations and cation & anion analysis, stoichiometry problems, calorimetric experiments for heat of reactions etc

### 2. AIMS

[The primary objective in this course is to:

1. The Primary objective in this course is to prepare freshman students for the General Chemistry
2. laboratory experience and to build a firm foundation in laboratory courses in chemical science.
3. Another objective is to make the students aware of the importance of accuracy and precision in
4. chemical analysis, and to produce and analyze the results of an experiment, aimed at developing
5. the essential laboratory skills both in qualitative and quantitative analysis and how to use these
6. skills in accordance with laboratory safety procedures. It also aims to develop critical thinking,
7. problem solving and communication skills.]

### 3. LEARNING OUTCOMES, TEACHING, LEARNING and ASSESSMENT METHODS

<b>Learning Outcomes (Definitive)</b>	<b>Teaching and Learning methods (Indicative)</b>	<b>Assessment (Indicative)</b>
Upon successful completion of this course, students will be able to:		



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1. Identify safety equipment, and instruments. Record and manipulate measurements using the correct number of significant figures	Power point slides, Whiteboard, Lecture notes, Handouts, lab demonstration and lab work	Written Examinations-Quiz/Mid-term/Final
2. Measurement of density of the materials	Power point slides, Whiteboard, Lecture notes, Handouts, lab demonstration and lab work	Written Examinations-Quiz/Mid-term/Final
3. Classify and name simple inorganic compounds and ions and to write their formulae.	Power point slides, Whiteboard, Lecture notes, Handouts, lab demonstration and lab work	Written Examinations-Quiz/Mid-term/Final
4. Perform standard chemical techniques such as: solution preparation, dilution and titration	White board Lecture, power point presentations, and lab work	Written Examinations-Quiz/Mid-term/Final
5. Recognize cations and anions Understanding of chemical reaction of inorganic ions and predict the reaction products	Group work, Lecture, power point presentations, and lab work	Written Examinations-Quiz/Mid-term/Final

#### 4. ASSESSMENT WEIGHTING

Assessment	Percentage of final mark (%)
Lab reports and Book	30
Quizzes	10
Mid-term Exam	20
Final Exam	40
<b>TOTAL</b>	<b>100%</b>

#### 5. ACHIEVING A PASS

Students will achieve **01** credit hours for this course by passing **ALL** of the course assessments [*alternatively, list the compulsory pass assessments\**] and achieving a **minimum overall score of 50%**

**NB \*Ensure that ALL learning outcomes are taken into account**

#### 6. COURSE CONTENT (Indicative)

LECTURE TOPIC	TIME (HOURS)
Practical 1: Laboratory Safety, Organic Chemistry Glass wares and Equipment	3
Practical 2 Measurements, Mass volume and density	3
Practical 3: Naming Elements and compounds	3
Practical 4: Tests for cations and anions + Quiz1	3
Tutorial	3
Midterm Examination	3



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Practical 5: Ionic reactions in aqueous solutions	3
Practical 6: Standard solution and dilution	3
Practical 7: Acid – base Titration (Part 1)	3
Practical 7: Acid – base Titration (Part 2) + Quiz 2	3
Practical 8: Calorimetry and Hess's Law Part A	3
Practical 8: Calorimetry and Hess's Law Part B.	3
Revision and Tutorial	6
Final Examination	3
<b>TOTAL HOURS</b>	<b>45</b>
Plus, <b>RECOMMENDED INDEPENDENT STUDY HOURS</b>	<b>6</b>
<b>TOTAL COURSE HOURS</b>	<b>57</b>

**7. RECOMMENDED REFERENCES**

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

**Library + online resources:**

Moodle,

[https://chem.libretexts.org/Bookshelves/General\\_Chemistry/Map%3A\\_Chemistry\\_\(Zumdahl\\_and\\_Decoste\)](https://chem.libretexts.org/Bookshelves/General_Chemistry/Map%3A_Chemistry_(Zumdahl_and_Decoste))

**Open Educational Resources:**

<https://www.khanacademy.org>

Chemistry I lab manual Library



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