



THE FEDERAL UNIVERSITY OF TECHNOLOGY, AKURE

Department of Chemistry

CHE 101– Basic General Chemistry I.

COURSE PARTICULARS

Course Code: CHE 101

Course Title: Basic General Chemistry I.

No. of Units: 4

Course Duration: Two hours of theory and Three hours of Practical per week for 15 weeks.

Status: Compulsory

Course Email Address: che101@gmail.com

Course Webpage: <http://www.che.futa.edu.ng/courseschedule.php?coursecode=CHE%20101>

Prerequisite: NIL

COURSE INSTRUCTORS

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COURSE DESCRIPTION

Atoms, atomic structures, atomic theory, aufbau method, Hund's rule, Pauli Exclusion principles, atomic spectra, molecules and chemical reaction, energetics, chemical equation and stoichiometry, atomic Structure and; Modern electronic theory of atoms; Radioactivity; Chemical kinetics, collision theory, Kinetic theory of gases, solution, solubility and solubility product. Electro chemistry, electrode potential, half-cell equation.

COURSE OBJECTIVES

The objectives of this course are to:

- Explore the available raw materials; their chemistry and applications.
- Understand the process of energy generation.
- Appraise the industrial chemical process of transforming raw materials to desired products.

COURSE LEARNING OUTCOMES / COMPETENCIES

Upon successful completion of this course, the student will be able to:

(Knowledge based)

- This is a bridging course between the ordinary level and university chemistry; it is an introduction university chemistry whereby the basic chemistry principles are introduced to the aspiring university students.
- Students should be able to handle chemistry apparatus and be able to undertake simple practicals.
- Know some basic equipments involved in solving problems relating to physical chemistry and be well versed in chemical calculations

(Skills)

GRADING SYSTEM FOR THE COURSE

This course will be graded as follows:

Practicals	30%
<u>Final Examination</u>	<u>70%</u>
<u>TOTAL</u>	<u>100%</u>

GENERAL INSTRUCTIONS

Attendance: It is expected that every student will be in class for lectures and also participate in all assessment exercises. Attendance records will be kept and used to determine each person's qualification to sit for the final examination. In case of illness or other unavoidable cause of absence, the student must communicate as soon as possible with any of the instructors, indicating the reason for the absence.

Academic Integrity: Violations of academic integrity, including dishonesty in assignments, examinations, or other academic performances are prohibited. You are not allowed to make copies of another person's work and submit it as your own; that is plagiarism. All cases of academic dishonesty will be reported to the University Management for appropriate sanctions in accordance with the guidelines for handling students' misconduct as spelt out in the Students' Handbook.

Assignments and Group Work: Students are expected to submit assignments as scheduled. Failure to submit an assignment as at when due will earn the affected student zero for that negligence. Only under extenuating circumstances, for which a student has notified any of the instructors in advance, will late submission of assignments be permitted.

Code of Conduct in Lecture Rooms and Laboratories: Students should turn off their cell phones during lectures. Students are prohibited from engaging in other activities (such as texting, watching videos, fighting, smoking, *etc.*) during lectures. Food and drinks are not permitted in the laboratories. Absolute silence should be maintained during lectures except when asking or responding to question.

READING LIST

¹ Brown, T. L., LeMay Jr, Bursten, B. E. and Murphy, C. J. ((2009). *Chemistry: The Central Science 11th Edition*. Pearson Education International, Upper Saddle River, N. J. USA 1117p.

⁴ Microsoft Encarta Premium DVD. (2009).

¹ Lee, J. D (2008). *Concise Inorganic Chemistry*. 5th Edition. Authorized Reprint Published by Blackwell Science Limited, France. 1032p.

³ McCurry, J. (1999) *Organic Chemistry* 5th Edition Published by Brooks/Cole, Pacific Grove, USA.

Legend

- 1- Available in the University Library
- 2- Available in Departmental/School Libraries
- 3- Available on the Internet.
- 4- Available as Personal Collection
- 5- Available in local bookshops.

COURSE OUTLINE

Week	Topic	Remarks
1	Atoms,	During this first class, the students will be introduced to atoms and atomic sub-particles
2 & 3	<ul style="list-style-type: none"> • , atomic theory, • aufbau method, • Hund's rule, • Pauli Exclusion principles, 	Students will be introduced to the various atomic theories, appraise Dalton atomic principles and the fillings of electrons into orbitals.
4 & 5	atomic structure, atomic spectra, molecules and	Students will be exposed to the atomic structures, spectra and molecules as well as stoichiometry of reactions.
6	chemical reaction, energetics.	Students will be exposed to energy determination and calculations involved in chemical reactions.
7 & 8	<ul style="list-style-type: none"> • chemical equation and stoichiometry, • chemical equilibrium • atomic Structure and; • Modern electronic theory of atoms; 	Students will review chemical equations, reaction equilibria, modern electronic theory of atoms and atomic structure.
		MID-SEMESTER TEST (OPTIONAL)
9 & 10	<ul style="list-style-type: none"> • Radioactivity; • Acid, bases • pH, pKa and buffer • Kinetic theory of gases, • solution, solubility and solubility product. 	The students will be exposed to radioactivity; uses and measurement and kinetic theory of gases as well as solubility and reactivity.
11 & 12	<ul style="list-style-type: none"> • Chemical kinetics, • collision theory, 	The effect of rate equation in chemical reaction as well factors affecting the rate.

13 & 14	Electro chemistry, , half-cell equation. <ul style="list-style-type: none">• electrode potential	The student will be taught the fundamentals of electrochemistry; half-cell equation as well as electrode potentials and reactivity series.
15	REVISION	This is the week preceding the final examination. At this time, evaluation will be done to assess how far the students' expectations for the course have been met.