

The Hong Kong University of Science and Technology (Guangzhou)

UFUG1302-L01 Course Syllabus

[Course Title] Honors Chemistry I

[Course Code] UFUG1302

[No. of Credits] 3

[Any pre-/co-requisites] Gaokao Chemistry or Gaokao lizong (integrated science) or Level 3 in HKDSE 1.0x Chemistry or equivalent

Instructor 1:

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Instructor 2:

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Course Description

This course is designed for students who have acquired solid chemistry knowledge in high school (e.g., HKDSE 1.0X Chemistry, Mainland Gaokao Chemistry, etc.) and intend to pursue a degree related to chemistry (including but not limited to materials, energy, biology, environment, manufacturing, etc.). It is Part I of the Chemistry fundamental course (Honors Chemistry I/II). The course is modularized into 3 sections to accommodate the teaching and learning needs of students from different departments. With acquisition of this course, the students will have a deeper understanding of atomic/molecular structure and chemical bonding (Module 1), chemical reaction and thermochemistry (Module 2), and the general properties of substances (gases/liquids/solids) (Module 3).

Intended Learning Outcomes (ILOs)

By the end of this course, students should be able to:

1. describe the general structure and properties of atoms and molecules;
2. perform stoichiometric and energy calculations in chemical reactions;
3. describe the electronic configuration and chemical bonding with quantum mechanical principles;
4. describe precipitation, acid-base, and redox reactions;
5. apply thermodynamics fundamentals to describe chemical processes;
6. describe the properties of different states of matters;

7. develop critical thinking and problem-solving capabilities.

Weekly schedule & Weekly ILOs

Week	Topics	Indicate which ILOs this topic is related to
1	Chemistry Fundamentals and Measurement	ILO1, ILO6, ILO7
2	Atomic Structure and Periodicity	ILO1, ILO3, ILO7
3	Bonding: General Concepts	ILO1, ILO3, ILO7
4	Molecular Structure and Orbitals	ILO1, ILO3, ILO7
5	Stoichiometry	ILO1, ILO2, ILO7
6	Mid-term Exam	ILO1, ILO2, ILO4, ILO5, ILO6, ILO7
7	Types of Chemical Reactions and Solution Stoichiometry	ILO1, ILO2, ILO4, ILO5, ILO7
8	Experiment 1	ILO1, ILO5, ILO7
9	Chemical Energy	ILO1, ILO2, ILO3, ILO4, ILO5, ILO6, ILO7
10	Gases	ILO1, ILO5, ILO6, ILO7
11	Liquids and Solids	ILO1, ILO5, ILO6, ILO7
12	Properties of Solutions	ILO1, ILO5, ILO6, ILO7
13	Experiment 2	ILO1, ILO2, ILO3, ILO4, ILO5, ILO6, ILO7
14	Final Exam	ILO1, ILO2, ILO3, ILO4, ILO5, ILO6, ILO7

Assessment and Grading

This course will be assessed using criterion-referencing and grades will not be assigned using a curve. Detailed rubrics for each assignment are provided below, outlining the criteria used for evaluation.

Assessments:

Assessment Task	Contribution to Overall Course grade (%)
Assignments	20%
Mid-term Exam	20%
2 Lab Reports	20%
Final Exam	40%

Mapping of Course ILOs to Assessment Tasks

Assessed Task	Mapped ILOs	Explanation
Assignments	ILO1, ILO2, ILO3, ILO4, ILO5, ILO6, ILO7	This task assesses students' ability to explain and apply chemical concepts (ILO 1-6), evaluate their implications (ILO 1-6) and critically analyze their role in society (ILO 7).
Mid-term Exam	ILO1, ILO2, ILO3, ILO4, ILO5, ILO6, ILO7	The mid-term exam assesses students' ability to explain and apply chemical concepts (ILO 1-7).
2 Lab Reports	ILO1, ILO2, ILO3, ILO4, ILO5, ILO6, ILO7	The lab reports assess students' ability to perform experiments and analyze data (ILO 1-7).
Final Exam	ILO1, ILO2, ILO3, ILO4, ILO5, ILO6, ILO7	The final exam assesses students' ability to explain and apply chemical concepts (ILO 1-7).

Grading Rubrics & Final Grade Descriptors:

Grades	Short Description	Elaboration on subject grading description
A	Excellent Performance	Demonstrates a comprehensive grasp of subject matter, expertise in problem-solving, and significant creativity in thinking.
B	Good Performance	Shows good knowledge and understanding of the main subject matter, competence in problem-solving, and the ability to analyze and evaluate issues.
C	Satisfactory Performance	Possesses adequate knowledge of core subject matter, competence in dealing with familiar problems, and some capacity for analysis and critical thinking.
D	Marginal Pass	Has threshold knowledge of core subject matter, potential to achieve key professional skills, and the ability to make basic judgments. Benefits from the course and has the potential to develop in the discipline.
F	Fail	Demonstrates insufficient understanding of the subject matter and lacks the necessary problem-solving skills. Shows limited ability to think critically or analytically and exhibits minimal effort towards achieving learning goals. Does not meet the threshold requirements for professional practice or development in the discipline.

Course AI Policy

No AI allowed.

Communication and Feedback

Assessment marks for individual assessed tasks will be communicated via Canvas within two weeks of submission.

Resubmission Policy

Not applicable

Required Texts and Materials

Steven S. Zumdahl, Susan A. Zumdahl, Donald J. DeCoste **Chemistry: An Atoms First Approach** (3rd Edition)
Standalone Looseleaf Version

Academic Integrity

Students are expected to adhere to the university's academic integrity policy. Students are expected to uphold HKUST(GZ)'s Academic Honor Code and to maintain the highest standards of academic integrity. The University has zero tolerance of academic misconduct. Please refer to Regulations for Academic Integrity and Student Conduct for the University's definition of plagiarism and ways to avoid cheating and plagiarism.