

City University of Hong Kong
Course Syllabus

offered by Department of Chemistry
with effect from Semester A 2024/25

Part I Course Overview

Course Title:	Selected Topics in Chemistry & Molecular Sciences
Course Code:	CHEM6125
Course Duration:	1 semester
Credit Units:	3 credits
Level:	P6
Medium of Instruction:	English
Medium of Assessment:	English
Prerequisites: <i>(Course Code and Title)</i>	Nil
Precursors: <i>(Course Code and Title)</i>	Nil
Equivalent Courses: <i>(Course Code and Title)</i>	Nil
Exclusive Courses: <i>(Course Code and Title)</i>	Nil

Part II Course Details

1. Abstract

This is an advanced course on a contemporary topic or group of topics in Pure and/or Applied Chemistry, with examples including catalysis chemistry, materials chemistry, green chemistry, chemical biology and advanced analytical techniques for modern chemistry research. The topic will be announced in advance when this course is offered. It will provide a useful supplement to the advanced courses already specified in the programme.

This course aims to enable the students to achieve the following objects:

- Identify and explain, to an appropriate extent, the real-world and technological importance/relevance of the subject matters covered in a traditional chemistry postgraduate curriculum;
- Describe the selected experimental and theoretical principles of Chemistry and its applied ramifications;
- Apply such principles to structural analysis and property studies of the selected molecules/materials in combination with analytical or environmental procedures in Chemistry;
- Compare and relate the selected topics with the ones in General Chemistry and generate the conceptual links between the two fields, in order to establish a broader perspective on these foundational topics.

2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs	Weighting (If applicable)	Discovery-enriched curriculum related learning outcomes (Please tick where appropriate)		
			A1	A2	A3
1.	Carry out basic analysis of the concepts and reactions/processes in the selected areas of modern chemistry.			✓	
2.	Select or design an appropriate instrumental procedure for a structure/property analysis, and reliably implement it with accuracy and precision.			✓	✓
3.	Critically evaluate experiments/processes in the selected topics in the Chemical literature and effectively communicate this knowledge within their special study fields.			✓	✓
4.	Identify and uphold the social responsibilities of chemists, with particular concern for safety and environmental problems in the context of Modern Chemistry.		✓		✓
		100%			

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

3. Learning and Teaching Activities (LTAs)

(LTAs designed to facilitate students' achievement of the CILOs.)

LTA	Brief Description	CILO No.				Hours/week (If applicable)
		1	2	3	4	
Lectures and tutorials	Students will learn the approaches of modern chemistry research and its technological impacts.	✓				
Case studies	Students will be engaged in the case studies of the important types of chemical structures/processes, with visual assistance from computerized programs and real-object models.		✓			
Group activities	Students will involve in large and small group activities examining various molecules/materials/procedures, and the implications in modern technology development. Students will participate in team work in the form of group presentation of selected projects.			✓		
Teacher-student interaction and supervised in-depth discussion	Students will be engaged in extensive teacher-student interaction and be supervised with in-depth discussion among the students, in order to foster independent and critical thinking of the students.				✓	

4. Assessment Tasks/Activities (ATs)

(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks/Activities	CILO No.				Weighting	Remarks
	1	2	3	4		
Continuous Assessment: 0%						
Examination: 100% (duration: 3 hours)						
Examination	✓	✓	✓	✓	100%	
					100%	

Starting from Semester A, 2015-16, students must satisfy the following minimum passing requirement for courses offered by CHEM:

“A minimum of 40% in both coursework and examination components.”

5. Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Applicable to students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
Examination	<ul style="list-style-type: none"> Understand the key points in the lectures and tutorials Able to apply learning to analyse and solve problems Able to expand on learning and formulate new ideas 	Excellent abilities to identify the selected topics of interests among all the instructors; Excellent abilities to answer and explain the basic concepts and working principles; Excellent abilities to demonstrate understanding and critical thinking to the selected topics precisely and concisely with no errors	Good abilities to identify the selected topics of interests among all the instructors; Good abilities to answer and explain the basic concepts and working principles; Good abilities to demonstrate understanding and critical thinking to the selected topics precisely and concisely with minor errors	Basic abilities to identify the selected topics of interests among all the instructors; Basic abilities to answer and explain the basic concepts and working principles; Basic abilities to demonstrate understanding and critical thinking to the selected topics precisely and concisely with a few errors	Limited abilities to identify the selected topics of interests among all the instructors; Limited abilities to answer and explain the basic concepts and working principles; Limited abilities to demonstrate understanding and critical thinking to the selected topics precisely and concisely with some errors	Fail to identify the selected topics of interests among all the instructors; Fail to explain the basic concepts and working principles; Fail to demonstrate understanding and critical thinking to the selected topics.

Applicable to students admitted from Semester A 2022/23 to Summer Term 2024

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B)	Marginal (B-, C+, C)	Failure (F)
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Examination	<ul style="list-style-type: none"> • Understand the key points in the lectures and tutorials • Able to apply learning to analyse and solve problems • Able to expand on learning and formulate new ideas 	<p>Excellent abilities to identify the selected topics of interests among all the instructors; Excellent abilities to answer and explain the basic concepts and working principles; Excellent abilities to demonstrate understanding and critical thinking to the selected topics precisely and concisely with no errors</p>	<p>Good abilities to identify the selected topics of interests among all the instructors; Good abilities to answer and explain the basic concepts and working principles; Good abilities to demonstrate understanding and critical thinking to the selected topics precisely and concisely with minor errors</p>	<p>Limited abilities to identify the selected topics of interests among all the instructors; Limited abilities to answer and explain the basic concepts and working principles; Limited abilities to demonstrate understanding and critical thinking to the selected topics precisely and concisely with some errors</p>	<p>Fail to identify the selected topics of interests among all the instructors; Fail to explain the basic concepts and working principles; Fail to demonstrate understanding and critical thinking to the selected topics.</p>
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Part III Other Information (more details can be provided separately in the teaching plan)

1. Keyword Syllabus

(An indication of the key topics of the course.)

Organic chemistry, inorganic chemistry, chemical biology, chemistry and society, industrial, biological and environmental importance of chemistry, catalysis, luminescent and functional materials, characterization and analytical techniques, physical principles concerning the selected topics.

2. Reading List

2.1 Compulsory Readings

(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)

Nil

2.2 Additional Readings

(Additional references for students to learn to expand their knowledge about the subject.)

Nil