City University of Hong Kong
Course Syllabus

offered by Department of Chemistry
with effect from Semester A 2022/23

Part I Course Overview

Course Title:	Selected Topics in Modern Chemistry
Course Code:	CHEM8141
Course Duration:	1 semester
Credit Units:	3 credits
Level:	R8
Medium of Instruction:	English
Medium of Assessment:	English
Prerequisites: *(Course Code and Title)*	Nil
Precursors: *(Course Code and Title)*	Nil
Equivalent Courses: *(Course Code and Title)*	BCH8141 Selected Topics in Modern Chemistry
Exclusive Courses: *(Course Code and Title)*	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 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 undergraduate 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)

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 self-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. Teaching and Learning Activities (TLAs)

TLA	Brief Description	CILO No.				Hours/week (if applicable)
		1	2	3	4	
Lectures and tutorials	Teaching and learning will be discovery-based relying on a combination of lectures and tutorials to elucidate the approaches of modern chemistry research and its technological impacts.	✓				
Case studies	Teaching and learning will be discovery-based and to engage the students in the case studies of the important types of chemical structures/processes, with visual assistance from computerized programs and real-object models.		✓			
Group activities	Teaching and learning will be discovery-based that involve large and small group activities examining various molecules/materials/procedures, and the implications in modern technology development. Team work is emphasized in the form of group presentation of selected projects.			✓		
Teacher-student interaction and supervised in-depth discussion	Teaching and learning will be discovery-based entailing extensive teacher-student interaction and supervised in-depth discussion among the students, in order to foster independent and critical thinking of the students.				✓	

4. Assessment Tasks/Activities (ATs)

Assessment Tasks/Activities	CILO No.				Weighting*	Remarks
	1	2	3	4		
Continuous Assessment: 30%						
Tutorial Assignments	✓	✓			15%	
Oral Presentations			✓		10%	
Performance in Teacher-student Interaction				✓	5%	
Examination: 70% (duration: 3 hours)						
Examination	✓	✓			70%	
					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

Applicable to students admitted in Semester A 2022/23 and thereafter

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B)	Marginal (B-, C+, C)	Failure (F)
1. Tutorial Assignments	• Understand the basic concepts in the lectures • Able to analyse and explain reactions in modern chemistry research and the relevant technological impacts	High	Significant	Basic	Not even reaching marginal levels
2. Oral Presentations	• Able to evaluate chemical processes in the literature • Professionally present key points of learning • Effectively communicate information orally	High	Significant	Basic	Not even reaching marginal levels
3. Performance in Teacher-student Interaction	• Active participation in class discussions • Active participation in group activities • Able to raise well-thought questions in class	High	Significant	Basic	Not even reaching marginal levels
4. Examination	• 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	High	Significant	Basic	Not even reaching marginal levels

Applicable to students admitted before Semester A 2022/23

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1. Tutorial Assignments	• Understand the basic concepts in the lectures • Able to analyse and explain reactions in modern chemistry research and the relevant technological impacts	High	Significant	Moderate	Basic	Not even reaching marginal levels
2. Oral Presentations	• Able to evaluate chemical processes in the literature • Professionally present key points of learning • Effectively communicate information orally	High	Significant	Moderate	Basic	Not even reaching marginal levels
3. Performance in Teacher-student Interaction	• Active participation in class discussions • Active participation in group activities • Able to raise well-thought questions in class	High	Significant	Moderate	Basic	Not even reaching marginal levels
4. Examination	• 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	High	Significant	Moderate	Basic	Not even reaching marginal levels

Part III Other Information

1. Keyword Syllabus

Organic chemistry, inorganic chemistry, 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

1.	
2.	
3.	
…	

2.2 Additional Readings

1.	
2.	
3.	
…	