

**City University of Hong Kong  
Course Syllabus**

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

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**Part I Course Overview**

<b>Course Title:</b>	Dissertation
<b>Course Code:</b>	CHEM6127
<b>Course Duration:</b>	2 semesters (4 semesters for students taking the part-time mode of study) (dissertation-type)
<b>Credit Units:</b>	14 credits
<b>Level:</b>	P6
<b>Medium of Instruction:</b>	English
<b>Medium of Assessment:</b>	English
<b>Prerequisites:</b> <i>(Course Code and Title)</i>	Nil
<b>Precursors:</b> <i>(Course Code and Title)</i>	Nil
<b>Equivalent Courses:</b> <i>(Course Code and Title)</i>	Nil
<b>Exclusive Courses:</b> <i>(Course Code and Title)</i>	Nil

## Part II Course Details

### 1. Abstract

This course enables students to become competent in applying theory and methodology to a specific problem, to develop their ability to carry out investigative/research work in a selected area of chemical science, and develop their abilities to present findings in a precise and coherent manner. On completing this course, students will be able to:

- Carry out research and development work, and to solve practical problems;
- Demonstrate specialist skills in a chosen subject area through the application of theory and techniques provided by the course;
- Demonstrate their initiative, intellectual achievement and understanding of the chosen subject matter, as well as the principles being applied; and
- Manage and present their dissertation in a precise and coherent manner.

### 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.	Develop, state, and justify a testable problem related to chemical science and technology based on a literature review.		✓	✓	
2.	Design experiments relevant to the problem being analysed, and utilise appropriate skills and/or instrumentation(s) to undertake the experiments.			✓	
3.	Analyse and interpret data, and accurately present experimental findings in an appropriate fashion.			✓	
4.	Write a dissertation presenting the problem being analysed. The dissertation should be organized in the fashion of a scientific paper, i.e. it should include research background, experimental findings, data interpretations, and conclusions.			✓	✓
5.	Make a formal oral presentation of the research project, effectively summarising the project's background, the problem being analysed, the methods involved, the results achieved and the conclusions which result.			✓	✓
		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	5	
Discussions with supervisor	Students will discuss with the supervisor the research topic, and student's reading of the current literature will lead to the development, and refinement, of a testable chemical problem	✓	✓				
Experiments	Students will undertake suitable experiments under supervision, and maintain a log book of data relevant to the experimental process		✓				At least 14 hours/week for 24 weeks; (At least 7 hours/week for 48 weeks for students taking the part-time mode of study)
Data analysis	Students will be engaged in data analysis, including the use of appropriate characterization and analytical techniques			✓			
Dissertation writing	Students will write a formal scientific report, under guidance, summarising the experimental results in the context of knowledge related to the subject matter				✓		
Oral presentations	Students will give two formal oral presentations, one in the early stage of project development (week 6 for full-time students and week 10 for part-time students; any necessary change or modification to the project objectives can be made at this stage); the other one at the end of the project. The duration of each presentation is 25 mins (5-min question and answer session included)					✓	

Note: CHEM6127 will be offered to students of full-time/combined study mode admitted in 2021-22 or thereafter.

	Full-time mode	Combined mode
<b>Normal Duration</b>	2 semesters (Semester A and Semester B)	4 semesters (Semester A, Semester B, Semester A and Semester B)
<b>Maximum Extension Period</b>	4 semesters (Semester A, Semester B, Semester A and Semester B)	6 semesters (Semester A, Semester B, Semester A, Semester B, Semester A and Semester B)

After which no further extension is permitted.

#### 4. Assessment Tasks/Activities (ATs)

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

Assessment Tasks/Activities	CILO No.					Weighting	Remarks
	1	2	3	4	5		
Continuous Assessment: <u>100%</u>							
Oral presentations	✓		✓		✓	30%	Total 2 presentations, each of them accounts for 15% of the final marks
Dissertation	✓	✓	✓	✓		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.”**

**Note:** Students can apply for an extension of the deadline for dissertation report submission. However, such application would require approval of the supervisor and the course leader.

## 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)
1. Oral presentations	Ability to demonstrate or explain the principles, methodologies, problems and limitations of the selected research topic and experimental findings	<b>High</b> Able to demonstrate a thorough understanding of principles and methodologies, with clear and engaging communication, comprehensive analysis of problems and limitations, strong use of relevant examples, and excellent presentation skills.	<b>Significant</b> Able to show a good grasp of the material, with mostly clear organization and logical flow, address most problems and limitations, uses relevant examples effectively, and demonstrates strong communication skills with minor delivery issues.	<b>Moderate</b> Show a basic understanding of key concepts, and offer limited discussion of problems and limitations, include few relevant examples, and have noticeable issues in verbal communication.	<b>Basic</b> Demonstrate limited understanding of the topic, lacks organization and coherence, provide very little analysis of problems and limitations, use inappropriate or irrelevant examples, and exhibit poor communication skills that hinder understanding.	<b>Not even reaching marginal levels</b> Show no understanding of the principles or methodologies, which is incoherent and difficult to follow. Fail to address problems and limitations. Provide no relevant examples, and demonstrate very poor communication skills that completely obstruct comprehension.

<p>2. Dissertation</p>	<ul style="list-style-type: none"> <li>• Demonstrate critical thinking ability and problem solving ability in the selected research topic</li> <li>• Novelty of the research project</li> <li>• Ability to provide detailed, critical analysis of the data, clear explanations and fair justifications</li> <li>• Demonstrate ability in integration of various sources of information to explain the impact of the findings via clear written communication</li> </ul>	<p><b>High</b> The dissertation demonstrates exceptional critical thinking and problem-solving abilities, showcasing a highly innovative research project. It provides a thorough and insightful critical analysis of literature results, with clear, well-supported explanations and justifications. The integration of various sources of information is seamless, effectively illustrating the impact of the findings. Written communication is clear, well-organized, and free of errors, enhancing the overall understanding of the research.</p>	<p><b>Significant</b> The dissertation exhibits good critical thinking and problem-solving skills, with a research project that shows some novelty. It includes a solid critical analysis of literature results, mostly clear explanations, and reasonable justifications. The integration of different sources is effective, and the impact of the findings is communicated well, though some sections may lack depth or clarity. Written communication is generally clear and organized, with few minor errors.</p>	<p><b>Moderate</b> The dissertation reflects a basic level of critical thinking and problem-solving ability, with limited novelty in the research project. The analysis of literature results is superficial, with unclear explanations and weak justifications. Integration of sources is present but inconsistent, leading to a vague understanding of the findings' impact. Written communication is adequate but may lack clarity and organization, with several errors that distract from the content.</p>	<p><b>Basic</b> The dissertation demonstrates minimal critical thinking and problem-solving skills, with little to no novelty in the research project. The critical analysis of literature is inadequate, with unclear explanations and insufficient justification for findings. Integration of sources is poorly executed, resulting in a lack of coherence in explaining the impact of findings. Written communication is unclear, disorganized, and contains numerous errors that hinder comprehension.</p>	<p><b>Not even reaching marginal levels</b> The dissertation shows no evidence of critical thinking or problem-solving abilities and lacks any novelty in the research project. There is no critical analysis of literature results, with unclear or absent explanations and justifications. Integration of information is ineffective or nonexistent, leading to a failure to communicate the impact of findings. Written communication is incoherent, poorly structured, and filled with errors, making it difficult to understand the content.</p>
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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)
1. Oral presentations	Ability to demonstrate or explain the principles, methodologies, problems and limitations of the selected research topic and experimental findings	<b>High</b> Able to demonstrate a thorough understanding of principles and methodologies, with clear and engaging communication, comprehensive analysis of problems and limitations, strong use of relevant examples, and excellent presentation skills.	<b>Significant</b> Able to show a good grasp of the material, with mostly clear organization and logical flow, address most problems and limitations, uses relevant examples effectively, and demonstrates strong communication skills with minor delivery issues.	<b>Basic</b> Show a basic understanding of key concepts, and offer limited discussion of problems and limitations, include few relevant examples, and have noticeable issues in verbal communication.	<b>Not even reaching marginal levels</b> Show no understanding of the principles or methodologies, which is incoherent and difficult to follow. Fail to address problems and limitations. Provide no relevant examples, and demonstrate very poor communication skills that completely obstruct comprehension.
2. Dissertation	<ul style="list-style-type: none"> <li>• Demonstrate critical thinking ability and problem solving ability in the selected research topic</li> <li>• Novelty of the research project</li> <li>• Ability to provide detailed, critical analysis of the data, clear explanations and fair justifications</li> <li>• Demonstrate ability in integration of various sources of information to explain the impact of the findings via clear written communication</li> </ul>	<b>High</b> The dissertation demonstrates exceptional critical thinking and problem-solving abilities, showcasing a highly innovative research project. It provides a thorough and insightful critical analysis of literature results, with clear, well-	<b>Significant</b> The dissertation exhibits good critical thinking and problem-solving skills, with a research project that shows some novelty. It includes a solid critical analysis of literature results, mostly clear explanations, and reasonable justifications. The	<b>Basic</b> The dissertation reflects a basic level of critical thinking and problem-solving ability, with limited novelty in the research project. The analysis of literature results is superficial, with unclear explanations and weak justifications. Integration of sources is present but	<b>Not even reaching marginal levels</b> The dissertation shows no evidence of critical thinking or problem-solving abilities and lacks any novelty in the research project. There is no critical analysis of literature results, with unclear or absent explanations and justifications.

		<p>supported explanations and justifications. The integration of various sources of information is seamless, effectively illustrating the impact of the findings. Written communication is clear, well-organized, and free of errors, enhancing the overall understanding of the research.</p>	<p>integration of different sources is effective, and the impact of the findings is communicated well, though some sections may lack depth or clarity. Written communication is generally clear and organized, with few minor errors.</p>	<p>inconsistent, leading to a vague understanding of the findings' impact. Written communication is adequate but may lack clarity and organization, with several errors that distract from the content.</p>	<p>Integration of information is ineffective or nonexistent, leading to a failure to communicate the impact of findings. Written communication is incoherent, poorly structured, and filled with errors, making it difficult to understand the content.</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.)*

Nil

**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