

**City University of Hong Kong  
Course Syllabus**

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

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**Part I Course Overview**

<b>Course Title:</b>	Research Methodology and Ethics
<b>Course Code:</b>	CHEM8017
<b>Course Duration:</b>	1 semester
<b>Credit Units:</b>	2 credits
<b>Level:</b>	R8
<b>Medium of Instruction:</b>	English
<b>Medium of Assessment:</b>	English
<b>Prerequisites:</b> (Course Code and Title)	Nil
<b>Precursors:</b> (Course Code and Title)	Nil
<b>Equivalent Courses:</b> (Course Code and Title)	BCH8017 Research Methodology and Ethics
<b>Exclusive Courses:</b> (Course Code and Title)	Nil

## Part II Course Details

### 1. Abstract

The overall goal of this course for research students is to develop a deeper view on the research methodology and corresponding ethics. The primary content will include research attitude, problem definition, literature search and review, quantitative and qualitative methods, presenting research materials, publication and research career. Special emphasis is given to research ethics and how to write applications for ethical approval. Students will also develop the subject of their research with critical thinking and individual judgement and obtain skills required in interpreting published results, writing research proposals, reports and dissertation in the area of chemical methods and technology.

### 2. Course Intended Learning Outcomes (CILOs)

No.	CILOs <sup>#</sup>	Weighting* (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	A2	A3
1.	Demonstrate a good understanding of the fundamentals of research attitude, methodology and tools.	20%	✓	✓	
2.	Build up a framework for a selected research topic and be able to search and comment on relevant literatures.	20%	✓	✓	
3.	Apply the research methodology and tools to develop an original and practical research proposal.	20%	✓	✓	✓
4.	Logically present their or other's research works to peers for effective communication.	20%	✓	✓	✓
5.	Evaluate ethical concerns in scientific research and explore their implications for research design and methods.	20%	✓	✓	
		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	5	
Lecture	Research attitude, methodology, tools and ethics	✓	✓	✓	✓	✓	20 hours in total
Small group discussion/ written report	Activities include presentation, group discussion and critique of the research design and methodology of selected scientific works		✓	✓	✓		6 hours in total

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

Assessment Tasks/Activities	CILO No.					Weighting*	Remarks
	1	2	3	4	5		
Continuous Assessment: 100%							
Class discuss/Quiz	✓	✓	✓	✓	✓	30%	
Group/personal presentation		✓	✓	✓		40%	
Short essay on research design		✓	✓	✓	✓	30%	
Examination: 0 % (duration: _____, if applicable)						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. Class quiz and discussion	ABILITY to understand the fundamentals of research attitude, methodology and tools and participate in relevant discussion.	High	Significant	Basic	Not even reaching marginal levels
2. Group/personal presentation	ABILITY to effectively and logically present their or other's work to fellow peers.	High	Significant	Basic	Not even reaching marginal levels
3. Short essay on research design	ABILITY to employ knowledge and skills obtained in class for critical review of literatures and proposal writing	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. Class quiz and discussion	ABILITY to understand the fundamentals of research attitude, methodology and tools and participate in relevant discussion.	High	Significant	Moderate	Basic	Not even reaching marginal levels
2. Group/personal presentation	ABILITY to effectively and logically present their or other's work to fellow peers.	High	Significant	Moderate	Basic	Not even reaching marginal levels
3. Short essay on research design	ABILITY to employ knowledge and skills obtained in class for critical review of literatures and proposal writing	High	Significant	Moderate	Basic	Not even reaching marginal levels

## Part III Other Information

### 1. Keyword Syllabus

Research attitude, Research process, Defining a topic, Improving creativity, Literature search, Research management, Presenting research material, Publication, Research ethic, Preparing for a research career

### 2. Reading List

#### 2.1 Compulsory Readings

1.	
2.	
3.	
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#### 2.2 Additional Readings

1.	R. Murray, <i>How to Write a Thesis (4<sup>th</sup> edition)</i> , Open University Press, 2017.
2.	T. Greenfield, <i>Research Methods for Postgraduates (3<sup>rd</sup> edition)</i> , Wiley, 2016.
3.	S. Tak, <i>Research Methodology</i> , DND Publications, 2015.