

Course Syllabus

offered by Department of Chemistry
with effect from Semester B 2017/18

This form is for the completion by the *Course Leader*. The information provided on this form is the official record of the course. It will be used for the City University's database, various City University publications (including websites) and documentation for students and others as required.

Please refer to the Explanatory Notes on the various items of information required.

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**City University of Hong Kong
Course Syllabus**

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with effect from Semester B 2017/18**

Part I Course Overview

Course Title:	Chemical Safety and Advanced Instrumentation for Research
Course Code:	BCH8011M
Course Duration:	1 semester
Credit Units:	2 credits
Level:	R8
Proposed Area: <i>(for GE courses only)</i>	<input type="checkbox"/> Arts and Humanities <input type="checkbox"/> Study of Societies, Social and Business Organisations <input type="checkbox"/> Science and Technology
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

(A 150-word description about the course)

The course will enable students to develop their knowledge and capability in conducting risk assessment and dealing with the chemical safety issues in the research laboratory. Students will also be able to discover for themselves how selected advanced and widely used research techniques and instrumental methods in chemistry can be applied to their own research studies.

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.	Identify different types of chemical hazards	21%	✓		
2.	Conduct risk assessment in their research project and laboratory	33%	✓	✓	✓
3.	Demonstrate an understanding of the basic concepts and working principles of the selected spectroscopic techniques	24%	✓	✓	
4.	Apply different spectroscopic techniques in their research project	22%	✓	✓	✓
		100%			

* If weighting is assigned to CILOs, they should add up to 100%.

[#] Please specify the alignment of CILOs to the Gateway Education Programme Intended Learning outcomes (PILOs) in Section A of Annex.

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

TLA	Brief Description	CILO No.				Hours/week (if applicable)
		1	2	3	4	
Lectures	Explain key concepts such as organic spectroscopy, types of chemical hazards and chemical risk assessment.	✓	✓	✓	✓	14
Independent Studies	Require students to conduct risk assessment on their research projects/experiments.	✓	✓	✓		14
Assignment	Require students to apply various spectroscopic techniques for chemical identification and characterization.		✓	✓	✓	6
Group Discussions	Critically assess hazards in the experiments and discuss procedures that minimize the risks.	✓	✓		✓	12

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: <u>100%</u>						
Written Assignment		✓	✓		40%	
Oral Presentation	✓	✓		✓	30%	
Attendance	✓	✓		✓	30%	
Examination: <u>0%</u> (duration: --)						
* The weightings should add up to 100%.					100%	

Students are required to submit all assignments and the risk assessments of their research laboratory and experiments to their supervisors and ALERT lab managers. Students are also required to present their major types of experimental procedures related to their research project and the corresponding risk assessment in the group meetings. Students are also required to attend all group meetings.

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

“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.)

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1. Written Assignment	Ability to apply various spectroscopic techniques for chemical identification and characterization.	High	Significant	Moderate	Basic	Not even reaching marginal levels
2. Report / Oral Presentation	Ability to conduct risk assessment on their research projects/experiments.	High	Significant	Moderate	Basic	Not even reaching marginal levels
3. Attendance/ Discussion	Ability to critically assess hazards in the experiments and discuss procedures that minimize the risks.	High	Significant	Moderate	Basic	Not even reaching marginal levels

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.)

- Chemical Safety
- Risk assessment
- Chemical instrumentation

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.)

1.	
2.	
3.	
...	

2.2 Additional Readings

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

1.	Principles of instrumental analysis, 6 th ed. (Eds: D. A. Skoog, F. J. Holler, S. R. Crouch), Thomson, 2007
2.	Spectrometric Identification of Organic Compounds, 7 th ed. (Eds.: R. M. Silverstein, F. X. Webster, D. J. Kiemle), Wiley, Hoboken, 2005
3.	Chemical safety in the laboratory (Ed: S. K. Hall) Boca Raton, Lewis, 1994
4.	Chemical safety matters, (IUPAC), Cambridge University Press, Cambridge, 1992

A. Please specify the Gateway Education Programme Intended Learning Outcomes (PILOs) that the course is aligned to and relate them to the CILOs stated in Part II, Section 2 of this form:

GE PILO	Please indicate which CILO(s) is/are related to this PILO, if any (can be more than one CILOs in each PILO)
PILO 1: Demonstrate the capacity for self-directed learning	
PILO 2: Explain the basic methodologies and techniques of inquiry of the arts and humanities, social sciences, business, and science and technology	
PILO 3: Demonstrate critical thinking skills	
PILO 4: Interpret information and numerical data	
PILO 5: Produce structured, well-organised and fluent text	
PILO 6: Demonstrate effective oral communication skills	
PILO 7: Demonstrate an ability to work effectively in a team	
PILO 8: Recognise important characteristics of their own culture(s) and at least one other culture, and their impact on global issues	
PILO 9: Value ethical and socially responsible actions	
PILO 10: Demonstrate the attitude and/or ability to accomplish discovery and/or innovation	

GE course leaders should cover the mandatory PILOs for the GE area (Area 1: Arts and Humanities; Area 2: Study of Societies, Social and Business Organisations; Area 3: Science and Technology) for which they have classified their course; for quality assurance purposes, they are advised to carefully consider if it is beneficial to claim any coverage of additional PILOs. General advice would be to restrict PILOs to only the essential ones. (Please refer to the curricular mapping of GE programme: http://www.cityu.edu.hk/edge/ge/faculty/curricular_mapping.htm.)

B. Please select an assessment task for collecting evidence of student achievement for quality assurance purposes. Please retain at least one sample of student achievement across a period of three years.

Selected Assessment Task