香港城市大學
City University of Hong Kong

SYL

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.

Prepared / Last Updated by:

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Part I Course Overview

Course Title:	Introduction to Scientific Research
Course Code:	BCH8010M
Course Duration:	2 semesters
Credit Units:	2 credits
Level:	R8
Proposed Area: *(for GE courses only)*	☐ Arts and Humanities ☐ Study of Societies, Social and Business Organisations ☐ Science and Technology
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)*	Nil
Exclusive Courses: *(Course Code and Title)*	Nil

Part II Course Details

1. Abstract

(A 150-word description about the course)

The course is designed for students enrolled in the PhD programmes to train them in acquiring the necessary skills of practicing research scientists via discovery-based study activities.

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 and define the issues of significance in a given subject area by conducting literature research	20%	✓	✓	
2.	Review and critique the body of knowledge from literature of the given subject area	20%	✓	✓	
3.	Apply such knowledge to formulate the research methodology for a research project	30%		✓	✓
4.	Participate in the regular meetings with supervisors and lab members to report progress and exchange ideas	30%	✓	✓	✓
	** If weighting is assigned to CILOs, they should add up to 100%.*	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 in scientific research methodologies.	✓	✓	✓		6
Independent Studies	Critical evaluation of research methodologies in selected literatures.	✓	✓	✓		26
Group Discussions	In large and small group critical evaluation tasks and debates students will discuss and critically evaluate research strategies and methodologies adopted by other research teams in various disciplines of Biology, Biochemistry, Chemistry, Chemical Biology and Materials Sciences according to their publications.		✓	✓	✓	20

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: 100%						
Written Assignment	✓	✓	✓		50%	
Oral Presentation		✓	✓		30%	
Attendance				✓	20%	
Examination: 0% (duration: --)						
** The weightings should add up to 100%.*					100%	

Students are required to submit written research proposals to their supervisors, comprising of areas of research projects, literature research, and designs of experiments. Students are also required to present literature research and research proposals in regular group meetings. Students are required to attend group meetings regularly.

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	Demonstration of understanding of the scientific literature and the formulation of research proposals.	Demonstration of excellent understanding of the scientific literature and the formulation of research proposals. Thorough identification of important issues in the subject areas and design experiments based on reviewing of the current literature. Showing strong evidence of original thinking.	Demonstration of good understanding of the scientific literature and the formulation of research proposals. Ability to identify various issues in the subject areas and design experiments based on reviewing of the current literature.	Demonstration of adequate understanding of the scientific literature and the formulation of research proposals. Ability to design experiments based on reviewing of the current literature.	Only able to briefly describe some scientific principles in the research proposals. Ability to propose appropriate experiments for the research proposals.	Fail to produce relevant research proposals to demonstrate the understanding of the backgrounds of the selected field of studies. Fail to derive relevant experiments for the research proposals.
2. Written and Oral Presentation	Communication of research ideas in professional and efficient ways.	Ability to communicate ideas professionally, effectively and persuasively via written and oral presentations.	Ability to communicate ideas effectively and persuasively via written and oral presentations.	Ability to communicate ideas effectively via written and oral presentations.	Demonstration of some ability in communicating research ideas with peers.	Fail to communicate research ideas effectively.
3. Attendance	Attending lectures and various small/large group discussion activities.	90% attendance or above	75% < Attendance < 89%	60% < Attendance < 74%	50% < Attendance < 59%	Less than 50% attendance

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.)

- Conducting and presenting literature research
- Writing and presenting a research proposal
- Participating in group meetings

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.)

1.	Goodlad, S, 1996: Speaking Technically. Imperial College Press, 112pp.
2.	Holtom, D and E Fisher, 1999: Enjoy Writing Your Science Thesis or Dissertation! Imperial College Press, 278pp.
3.	Yang, J T, 1995: An Outline of Scientific Writing. World Scientific, 160pp

Annex
(for GE courses only)

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