

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:

Name: TBA Academic Unit: Department of Chemistry

Phone/email: TBA Date: 30 November 2017

**City University of Hong Kong
Course Syllabus**

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

Part I Course Overview

| | |
|--|---|
| Course Title: | Workshop on Cell and Molecular Biology |
| Course Code: | BCH8006M |
| Course Duration: | 3 weeks (Semester B + Semester Summer) |
| Credit Units: | 4 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)

This course aims to introduce to postgraduate research students at the CityU Suzhou campus the scope of Cell and Molecular Biology with a strong emphasis on first hand experience. The students will learn about molecular and cell biology in the context of the latest technological development. The students will acquire various techniques for basic molecular and cell biology experiments and extend to work on the model organism *C elegans*. The aim is to encourage students to consider their own research projects and interests based on the knowledge and techniques acquired in this course. This is an intensive 3-week course based entirely on coursework and is not research project-oriented. The students are expected to complete a pre-course reading assignment.

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. | Summarise advancement in cell and molecular biology | 30% | ✓ | ✓ | |
| 2. | Acquire data using basic equipment used in molecular and cell biology based on established protocols | 40% | ✓ | ✓ | |
| 3. | Discover, analyse, interpret and record data | 20% | | ✓ | ✓ |
| 4. | Apply molecular and cell biology principles to experiments and write a report in the format of journal manuscript | 10% | | ✓ | ✓ |
| | | 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 | Lectures / discussions /reading | ✓ | | | | 40 hours in total |
| Experiments | Experimentation | | ✓ | | | 60 hours in total |
| Data analysis | Data analysis tutorials and data analyses, using online resources to obtain probes, cells and <i>C. elegans</i> strains | | | ✓ | | 35 hours in total |
| Report writing | Report writing tutorials and report writing | | | | ✓ | 35 hours in total |

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> | | | | | | |
| Quiz on pre-course reading assignment and lecture materials | ✓ | | | | 20% | |
| Logbook entry of experimental data to demonstrate ability to follow protocols, operate equipment and acquire data | | ✓ | | | 30% | |
| Scientific presentation of data in the format of graphs and figures | | | ✓ | | 20% | |
| Written manuscript in journal publication format | | | | ✓ | 30% | |
| Examination: <u>0%</u> (duration: --) | | | | | | |
| * The weightings should add up to 100%. | | | | | 100% | |

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. Quiz | Ability to solve problems related to cell and molecular biology | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| 2. Logbook entry of experimental data | Ability to acquire data using basic equipment used in molecular and cell biology based on established protocols | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| 3. Scientific data presentation | Ability to discover, analyse, interpret, and present data | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| 4. Written manuscript | Ability to apply molecular and cell biology principles to experiments and write a report in the format of journal manuscript | 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.)

Light and fluorescent microscopy; cell culture techniques; measurement of cell growth and cell cycle; staining techniques for cell surface markers, organelle and cytoskeleton; DNA and RNA extraction; PCR and gel electrophoresis, gene cloning, Southern and western blots, *C elegans* culture and microscopy; online resources

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. | How to write dissertations & project reports. McMillan, Weyers, Pearson Education books ISBN 13: 97980273713586, ISBN10: 0273713582 |
| 2. | Reading primary literature: a practical guide to evaluating research articles in biology. Gillen. Pearson Education Books ISBN13: 9780805345995, ISBN10: 080534599X |
| 3. | Molecular Cell Biology. Lodish, Berk, Kaiser, Krieger, Scott, Bretscher, Ploegh, Matsudaira, W.H. Freeman. ISBN: 0-7167-7601-4 |
| 4. | Online Resources: http://www.protocol-online.org/prot/Molecular_Biology/ http://collections.plos.org/ploscompbiol/tensimplerules.php http://www.invitrogen.com/site/us/en/home/References/Molecular-Probes-The-Handbook.html |

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 |
|---------------------------------|
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