CHEM8006M: WORKSHOP ON CELL AND MOLECULAR BIOLOGY

Effective Term
Semester A 2025/26

Part I Course Overview

Course Title
Workshop on Cell and Molecular Biology

Subject Code
CHEM - Chemistry
Course Number
8006M

Academic Unit
Chemistry (CHEM)

College/School
College of Science (SI)

Course Duration
Non-standard Duration

Other Course Duration
3 weeks (Semester B + Semester Summer)

Credit Units
0-4

Level
R8 - Research Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
Nil

Precursors
Nil

Equivalent Courses
BCH8006M Workshop on Cell and Molecular Biology

Exclusive Courses
Nil

Part II Course Details

Abstract

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.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Summarise advancement in cell and molecular biology	30	x	x	
2	Acquire data using basic equipment used in molecular and cell biology based on established protocols	40	x	x	
3	Discover, analyse, interpret and record data	20		x	x
4	Apply molecular and cell biology principles to experiments and write a report in the format of journal manuscript	10		x	x

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.

Learning and Teaching Activities (LTAs)

	LTAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lectures	Lectures / discussions / reading	1	40 hours in total
2	Experiments	Experimentation	2	60 hours in total
3	Data analysis	Data analysis tutorials and data analyses, using online resources to obtain probes, cells and C. elegans strains	3	35 hours in total
4	Report writing	Report writing tutorials and report writing	4	35 hours in total

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks ("-" for nil entry)	Allow Use of GenAI?
1	Quiz on pre-course reading assignment and lecture materials	1	20	-	Yes
2	Logbook entry of experimental data to demonstrate ability to follow protocols, operate equipment and acquire data	2	30	-	Yes
3	Scientific presentation of data in the format of graphs and figures	3	20	-	Yes
4	Written manuscript in journal publication format	4	30	-	Yes

Continuous Assessment (%)

100

Minimum Continuous Assessment Passing Requirement (%)

40

Assessment Rubrics (AR)

Assessment Task

Quiz (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Ability to solve problems related to cell and molecular biology

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

Logbook entry of experimental data (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion
Ability to acquire data using basic equipment used in molecular and cell biology based on established protocols

Excellent
(A+, A, A-) High

Good
(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
Scientific data presentation (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion
Ability to discover, analyse, interpret, and present data

Excellent
(A+, A, A-) High

Good
(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
Written manuscript (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion
Ability to apply molecular and cell biology principles to experiments and write a report in the format of journal manuscript

Excellent
(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
Quiz (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion
Ability to solve problems related to cell and molecular biology

Excellent
(A+, A, A-) High

Good
(B+, B) Significant

Marginal
(B-, C+, C) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
Logbook entry of experimental data (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion
Ability to acquire data using basic equipment used in molecular and cell biology based on established protocols

Excellent
(A+, A, A-) High

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Part III Other Information

Keyword Syllabus
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

Reading List

Additional Readings

	Title
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