BMS8103: CELL AND MOLECULAR BIOLOGY RESEARCH

Effective Term
Semester B 2024/25

Part I Course Overview

Course Title
Cell and Molecular Biology Research

Subject Code
BMS - Biomedical Sciences
Course Number
8103

Academic Unit
Biomedical Sciences (BMS)

College/School
College of Biomedicine (BD)

Course Duration
One Semester

Credit Units
3

Level
R8 - Research Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
Nil

Precursors
Nil

Equivalent Courses
Nil

Exclusive Courses
NS5004 Molecular and Cellular Neuroscience

Part II Course Details

Abstract

This course is designed for postgraduate students to explore the spectrum of cell and molecular biology while gaining knowledge from general concepts to recent research. Rather than attending traditional lectures, the students will learn through lectures and interactive approaches involving group presentations and in-classroom discussions. As this is a research-focused postgraduate course, the students will learn the concepts of experimental techniques in various cell and molecular biology areas. Besides, through discussions, the students will understand how to apply general concepts to develop experimental techniques for research. This course also encourages postgraduate students to develop interests and ideas for designing research projects.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Understand general concepts of cell and molecular biology	20		x	x
2	Understand frequently used experimental techniques in the cell and molecular biology field	20		x	x
3	Apply the knowledge to develop students' ideas	20	x	x	
4	Present and discuss recent research outcomes	20	x	x	x
5	Write a report to describe students' ideas	20	x	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	Lecture	Lectures will provide general concepts.	1, 2	3 hours/week (Lecture + Tutorial)
2	Presentation	Students will present their understanding of general concepts and recent research outcomes.	1, 2, 4	3 hours/week (Lecture + Tutorial)
3	Discussion	Students will be involved in classroom discussions to interact with others.	3, 4	3 hours/week (Lecture + Tutorial)
4	Report writing	Students will describe their understanding of cell and molecular biology research.	1, 2, 3, 5	3 hours/week (Lecture + Tutorial)

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Discussion in the class and attendance	3, 4	20	
2	Presentation skills	1, 2, 4	40	
3	Report writing skills	1, 2, 3, 5	40	

Continuous Assessment (%)

100

Examination (%)

0

Minimum Continuous Assessment Passing Requirement (%)

0

Minimum Examination Passing Requirement (%)

0

Assessment Rubrics (AR)

Assessment Task

Presentation, discussion, critique etc. (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Ability to show the learning progress, analyse and express the synthesis of ideas

Excellent

(A+, A, A-) Outstanding performance on all CILOs. Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.

Good

(B+, B, B-) Substantial performance on all CILOS. Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.

Fair

(C+, C, C-) Satisfactory performance on the majority of CILOS possibly with a few weaknesses. Being able to profit from the course experience; understanding of the subject; ability to develop solutions to simple problems in the material.

Marginal

(D) Barely satisfactory performance on a number of CILOS. Sufficient familiarity with the subject matter to enable the student to progress without repeating the course.

Failure

(F) Unsatisfactory performance on a number of CILOS. Failure to meet specified assessment requirements, little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited or irrelevant use of literature

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Assessment Task

Presentation, discussion, critique etc. (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Ability to show the learning progress, analyse and express the synthesis of ideas

Excellent

(A+, A, A-) Outstanding performance on all CILOs. Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.

Good

(B+, B) Substantial performance on all CILOS. Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.

Marginal

(B-, C+, C) Satisfactory performance on the majority of CILOS possibly with a few weaknesses. Being able to profit from the course experience; understanding of the subject; ability to develop solutions to simple problems in the material.

Failure

(F) Unsatisfactory performance on a number of CILOS. Failure to meet specified assessment requirements, little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited or irrelevant use of literature

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Part III Other Information

Keyword Syllabus

Cell cycle; DNA replication; transcription; epigenetics; translation; proteomics

Reading List

Compulsory Readings

	Title
1	Nil

Additional Readings

	Title
1	How to write dissertations & project reports (2nd edition), McMillan, Weyers, Pearson Education books ISBN 13: 9780273743835, ISBN10: 027374383X
2	Reading primary literature: a practical guide to evaluating research articles in biology. Gillen. Peasron Education Books ISBN13: 9780805345995, ISBN10: 080534599X
3	Molecular Cell Biology 8th Edition. Lodish, Berk, Kaiser, Krieger, Bretscher, Ploegh, Amon, Martin. ISBN-13: 978-1464183393, ISBN-10: 1464183392
4	http://www.protocol-online.org/prot/Molecular_Biology/
5	http://collections.plos.org/ploscompbiol/tensimplerules.php
6	http://www.invitrogen.com/site/us/en/home/References/Molecular-Probes-The-Handbook.html