

Course Syllabus

Advanced Current Topics in Molecular and Integrative Biosciences

Course Title: Advanced Current Topics in Molecular and Integrative Biosciences (MBMG521/MBMB621)

Program: M.Sc and Ph.D. Programme in Molecular and Integrative Biosciences

Semester: 2/2025

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Credits: 1(1-0-2)

Pre-Requisites:

None

Course Description: Interpretation of Scientific Literature; Critical Review; Discussion of Recent Publications; Advanced Knowledge and Technology in Integrative Molecular

Bioscience

คำอธิบายรายวิชา: การวิเคราะห์วารสารวิชาการ วิเคราะห์บทความปริทัศน์ การวิพากษ์บทความปัจจุบัน การบูรณาการความรู้ขั้นสูงจากงานวิจัยในสาขาชีววิทยาศาสตร์ระดับโมเลกุล

Course Learning Outcomes (CLOs):

- To critically evaluate current research literature in molecular and integrative bioscience. (Knowledge)
- To develop effective scientific communication skills in analysing the implications of recent advances through presentations and discussions (Skills)
- Develop ethics and scientific integrity (Ethics)
- To foster interdisciplinary thinking and collaboration in addressing complex biological questions (Characters)

Alignment of Teaching and Assessment Methods to Course Learning Outcomes:

Course Learning Outcomes	Teaching Method	Assessment Method
To critically evaluate current research literature in molecular and integrative bioscience. (Knowledge – Aligned with PLO1).	<ol style="list-style-type: none"> 1. Paper discussion 2. Case studies 3. Examples 4. Class materials reading 	<ol style="list-style-type: none"> 1. Q&A 2. Analytical question 3. Performance
To develop effective scientific communication skills in analysing the implications of recent advances through presentations and discussions (Skills – Aligned with PLO2).	<ol style="list-style-type: none"> 1. Class discussion 2. Experience sharing 3. Presentation practice 	<ol style="list-style-type: none"> 1. Presentation /Discussion performance 2. Feedback from classmates
Develop ethics and scientific integrity (Ethics – Aligned with PLO3).	<ol style="list-style-type: none"> 1. Overview about Plagiarism 2. Experience sharing 3. Reference Manager 	<ol style="list-style-type: none"> 1. Personality* 2. Responsibility* 3. Punctuality*

Course Learning Outcomes	Teaching Method	Assessment Method
To foster interdisciplinary thinking and collaboration in addressing complex biological questions (Characters – Aligned with PLO4).	<ol style="list-style-type: none"> Instructor’s Guidance Experience sharing Scientific meeting practice 	<ol style="list-style-type: none"> Feedback from colleagues Self-reflection Observation during meeting

Course objectives and learning format:

- To provide students the opportunity to read advanced literature and integrating knowledge from various fields of molecular and Integrative Biosciences
- To develop students’ communication skills required for their scientific careers.
- To help students familiarize with scientific meeting in the journal club styles from provided topics based on lecturer expertise from various fields.

Assessment:

- Class participation and engagement: 10%
- In-class assessments by each lecturers: 80%
- Final presentation: 10%

Student’s achievement will be graded using symbols: A, B+, B, C+, C, D+, D or F, based on the criteria as follows:

Percentage	Grade	Description
80–100	A	Excellent
75–79	B+	Very Good
70–74	B	Good
65–69	C+	Fairly Good
60–64	C	Fair
55–59	D+	Poor
50–54	D	Very Poor

Percentage	Grade	Description
0–49	F	Fail

Mock Timetables

Week	Date	Week/Room	Topic	Teaching Staff
1	August 2024	9.00 – 10.00 am Room A407	Course Orientation	Duangrudee
1	August 2024	10.00 – 12.00 pm Room A407	Genomics and Bioinformatics	TBA
2	August 2024	10.00 – 12.00 pm Room A407	Epigenetics and Gene Regulation	TBA
3	September 2024	10.00 – 12.00 pm Room A407	Proteomics and Metabolomics	TBA
4	September 2024	10.00 – 12.00 pm Room A407	Structural Biology and Drug Design	Duangrudee
5	September 2024	10.00 – 12.00 pm Room A401	Vaccines and Advanced Therapeutics	TBA
6	September 2024	10.00 – 12.00 pm Room A401	Microbiomes	TBA
7	October 2024	10.00 – 12.00 pm Room A401	Immunology and Host-Pathogen Interactions	TBA
8	October 2024	10.00 – 12.00 pm Room A401	Neuroscience and Neurobiology	TBA
9	October 2024	10.00 – 12.00 pm Room A401	Yeast and Fluorescent Technologies	TBA

10	October 2024	10.00 – 12.00 pm Room A401	Et cetera	TBA
11	November 2024	10.00 – 12.00 pm Room A401	Emerging Technologies and Future Directions	TBA

Resources:

- Recent papers and scientific literature
- Online resources and research repositories
- Instructors hand out materials as appropriate

These following rubrics provide a framework for evaluating the achievement of program learning outcomes (PLOs) for both PhD and MSc students in the Molecular and Integrative Biosciences program, highlighting differences in expectations and performance criteria based on the level of study.

Rubrics for Assessing Program Learning Outcomes (PLOs) - PhD and MSc Students

Program Learning Outcome 1: Critical Evaluation of Current Research Literature Knowledge

Criteria	PhD Students	MSc Students
Depth of Analysis	Demonstrates exceptional depth and breadth in analyzing research literature, incorporating advanced concepts and methodologies.	Shows a comprehensive understanding of research literature, effectively synthesizing key findings and methodologies.
Integration of Perspectives	Integrates diverse perspectives and approaches from multiple disciplines to critically evaluate research literature.	Incorporates relevant perspectives and approaches from the field to assess research literature effectively.

Originality of Insights	Generates original insights and perspectives through critical evaluation of research literature, contributing novel ideas to the discourse.	Demonstrates the ability to identify unique insights and connections within research literature, offering valuable contributions to discussions.
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Program Learning Outcome 2 & 3: Scientific Communication Skills

Criteria	PhD Students	MSc Students
Clarity of Presentation	Communicates research ideas and findings with exceptional clarity and precision, utilizing advanced scientific language effectively with correct reference.	Communicates research ideas and findings clearly and concisely, employing appropriate scientific terminology and language with proper reference.
Organization of Content	Demonstrates sophisticated organization and structure in presentations and written communication, effectively conveying complex ideas.	Organizes content logically and coherently, presenting ideas in a structured and easily understandable manner.
Engagement with Audience	Engages the audience effectively through compelling delivery and presentation style, fostering discussion and debate.	Demonstrates engagement with the audience, effectively conveying enthusiasm and interest in the topic of discussion.

Program Learning Outcome 4: Interdisciplinary thinking and collaboration as a crucial scientist's characters

Criteria	PhD Students	MSc Students
Integration of Disciplines	Integrates principles and methodologies from multiple disciplines seamlessly, demonstrating a nuanced understanding of interdisciplinary connections.	Recognizes and incorporates principles and methodologies from diverse disciplines, demonstrating an understanding of interdisciplinary approaches.
Collaboration Skills	Collaborates effectively with peers and experts from different fields, contributing constructively to interdisciplinary discussions and projects.	Demonstrates the ability to work collaboratively with peers from diverse backgrounds, actively participating in interdisciplinary activities and initiatives.
Adaptability and Flexibility	Demonstrates adaptability and flexibility in navigating complex interdisciplinary challenges, seeking innovative solutions and approaches.	Shows adaptability and openness to interdisciplinary perspectives, willing to explore new ideas and approaches in collaboration with others.

Note: This syllabus is subject to change at the instructor's discretion based on the evolving nature of research and developments in Molecular and Integrative Biosciences. Students are encouraged to actively engage in discussions and stay updated with relevant literature throughout the course.

Date of Revision: 21 April 2024