#### Course Syllabus

MBMB 500 Graduate School Essentials for M.Sc. Students in Molecular and Integrative Biosciences

Academic year 2025

Course ID and Title MBMB 500 Graduate School Essentials for M.Sc. Students in Molecular and

Integrative Biosciences

**Course coordinator** Asst. Prof. Poochit Nonejuie, Ph.D.

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**Instructors:** Asst. Prof. Poochit Nonejuie, Ph.D.

**Credits:** 2 (2-0-4)

Curriculum: Master of Science Program in Molecular and Integrative Biosciences

(required course)

Semester offering: First semester

**Pre-requisites:** None

### Course learning outcomes (CLOs) and their alignment with PLOs:

CLOs	PLO1	PLO2	PLO3	PLO4
By the end of the course, student should be able to:	PLOI	FLOZ	FLOS	FLO4
1. Gain a comprehensive understanding of the academic				
standards, rigor, and expectations unique to graduate			./	
studies, including research methodologies, research	<b>V</b>		•	
ethics, chemical safety and biosafety				
2. Become familiar with academic resources available to				
graduate students and demonstrate the ability to use				
information technology to locate relevant academic	✓	$\checkmark$		
resources including; scholarly journal articles, books and				
intellectual properties				
3. Demonstrate Master of Science level reading, writing,				
oral communication and relevant interpersonal skills	<b>V</b>	•	•	V
4. Identify various research topics in the areas of				
molecular and integrative biosciences and related	✓			
disciplines for the Master of Science's thesis				

MBMB 500 Graduate School Essentials for M.Sc. Students in Molecular and Integrative Biosciences

### Course description

Scientific methods; research ethics, chemical safety, biosafety; biometry; databases search; literature search; intellectual property; academic writing; academic presentation; research disciplines in molecular and integrative biosciences

# Alignment of Teaching and Assessment Methods to Course Learning Outcomes:

Course Learning Outcomes	Teaching Method	Assessment Method
1. Gain a comprehensive	1. Lecture	1. Q&A during lecture
understanding of the academic	2. Discussion	2. Discussion performance
standards, rigor, and expectations		3. Quiz / short exercise
unique to graduate studies,		4. Assignment
including research		
methodologies, research ethics,		
chemical safety and biosafety		
2. Become familiar with academic	1. Lecture	1. Q&A during lecture
resources available to graduate	2. Discussion	2. Discussion performance
students and demonstrate the		3. Quiz / short exercise
ability to use information		4. Assignment
technology to locate relevant		
academic resources including;		
scholarly journal articles, books		
and intellectual properties		
3. Demonstrate Master of Science	1. Lecture	1. Q&A during lecture
level reading, writing, oral	2. Discussion	2. Discussion performance
communication and relevant		3. Quiz / short exercise
interpersonal skills		4. Assignment
4. Identify various research topics	1. Lecture	1. Q&A during lecture
in the areas of molecular and	2. Discussion	2. Discussion performance
integrative biosciences and		
related disciplines for the Master		
of Science's thesis		

# Course Schedule, learning activity and assessment:

	Activities	Description	Assessment methods	Scores	Time
Day 1	Topic 1: Scier	ntific methods and research ethics	5		
1	Lecture,	Scientific methods	1. Q&A during	40%	9.00-11.00
	discussion,		lecture		
	quiz		2. Quiz / short		
			exercise		
2	Lecture,	Research ethics	1. Q&A during	40%	11.00-12.00
	discussion,		lecture		
	quiz		2. Quiz / short		
			exercise		
3	Participation,		Participation	20%	9.00-12.00
	discussion		Discussion		
			performance		
Day 1	Topic 2: Cher	nical safety and biosafety			
1	Lecture,	Chemical safety	1. Q&A during	40%	13.00-14.00
	discussion,		lecture		
	quiz		2. Quiz / short		
			exercise		
2	Lecture,	Biosafety	1. Q&A during	40%	14.00-15.00
	discussion,		lecture		
	quiz		2. Quiz / short		
			exercise		
3	Participation,		Participation	20%	13.00-15.00
	discussion		Discussion		
			performance		
Day 2	Topic 3: Introd	luction to biometry			

Lecture, discussion, quiz  Participation, discussion  Day 2 Topic 4: Databases and literature search;  Lecture, discussion, quiz  Lecture, discussion, quiz  Day 2 Topic 4: Databases and literature search;  Lecture, discussion, quiz  Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation						
2. Ouiz / short exercise  2. Ouiz / short exercise  2. Ouiz / short exercise  3. Participation, discussion, quiz  Day 2. Topic 4: Databases and literature search;  1. O&A during lecture 2. Ouiz / short exercise  Participation Discussion performance  1. O&A during lecture 2. Ouiz / short exercise  1. O&A during lecture 2. Ouiz / short exercise  3. Participation, discussion, quiz  Participation Discussion lecture 2. Ouiz / short exercise  3. Participation, discussion performance  Day 3. Topic 5: Academic writing and presentation  1. O&A during lecture 2. Ouiz / short exercise  Day 3. Topic 5: Academic writing and presentation  1. O&A during lecture 2. Ouiz / short exercise  Day 3. Topic 5: Academic writing and presentation  1. O&A during lecture 2. Ouiz / short exercise  Day 3. Topic 5: Academic writing and presentation  1. O&A during lecture 2. Ouiz / short 3. Ouiz / short 4. Ouiz / s	1	Lecture,	Statistics for research	1. Q&A during	40%	9.00-10.00
exercise		discussion,		lecture		
2 Lecture, discussion, quiz  Participation, discussion, quiz  Topic 4: Databases and literature search;  Lecture, discussion, quiz  Topic 4: Databases  Databases  Lecture, discussion, quiz  Lecture, discussion, quiz  Participation Discussion Performance  1. Q&A during lecture 2. Quiz / short exercise  1. Q&A during lecture 2. Quiz / short exercise  2. Quiz / short exercise  3. Participation, quiz  Participation, discussion Performance  1. Q&A during lecture 2. Quiz / short exercise  3. Participation, discussion Performance  Discussion Performance  1. Q&A during lecture 2. Quiz / short exercise  2. Quiz / short exercise  Day 3. Topic 5: Academic writing and presentation  1. Q&A during lecture 2. Quiz / short exercise  Day 3. Topic 5: Academic writing and presentation  1. Q&A during lecture 2. Quiz / short Participation Discussion Performance  Discussion Perfo		quiz		2. Quiz / short		
discussion, quiz  Participation, discussion  Day 2  Topic 4: Databases and literature search;  Lecture, discussion, quiz  Lecture, discussion, quiz  Participation Discussion Discussion Discussion Discussion Discussion Discussion Discussion Discussion Discussion Databases  1. Q&A during Lecture 2. Quiz / short exercise  2  Lecture, discussion, quiz  Participation Discussion				exercise		
discussion, quiz  Participation, discussion  Day 2  Topic 4: Databases and literature search;  Lecture, discussion, quiz  Lecture, discussion, quiz  Participation Discussion Discussion Discussion Discussion Discussion Discussion Discussion Discussion Discussion Databases  1. Q&A during Lecture 2. Quiz / short exercise  2  Lecture, discussion, quiz  Participation Discussion						
quiz  Participation, discussion  Participation Discussion performance  Topic 4: Databases and literature search;  Lecture, discussion, quiz  Lecture, discussion, quiz  Participation Discussion Performance  1. Q&A during Lecture 2. Quiz / short exercise  Literature search 1. Q&A during Lecture 2. Quiz / short exercise  Participation Discussion Participation Discussion Discussion Performance  Day 3 Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Day 3 Topic 5: Academic writing Lecture Day 3 Topic 5: Academic writing Lecture Day 4096 Discussion	2	Lecture,	Biostatistics	1. Q&A during	40%	10.00-11.00
exercise    Participation, discussion   Participation   Databases		discussion,		lecture		
Participation, discussion  Day 2 Topic 4: Databases and literature search;  Lecture, discussion, quiz  Lecture, discussion, quiz  Lecture, discussion, quiz  Participation Discussion performance  1. Q&A during lecture 2. Quiz / short exercise  Literature search discussion, quiz  Participation Participation Discussion performance  2. Quiz / short exercise  Discussion Participation Discussion performance  Discussion Participation Discussion performance  Discussion Participation Discussion performance  Discussion Participation Discussion performance  Discussion Participation Pa		quiz		2. Quiz / short		
Day 2 Topic 4: Databases and literature search;  1 Lecture, discussion, quiz  2 Lecture, discussion, quiz  1 Lecture, discussion, quiz  2 Lecture, discussion, quiz  3 Participation, discussion  Topic 5: Academic writing and presentation  1 Lecture, discussion, quiz  1 Lecture, discussion, quiz  1 Lecture  2 Ouiz / short exercise  2 Ouiz / short exercise  3 Participation Discussion performance  1 Lecture, discussion performance  1 Lecture, discussion, quiz  1 Lecture, discussion, quiz  1 Lecture, discussion, quiz  1 Q&A during 40% 9.00-10.00 electure 2 Ouiz / short exercise				exercise		
Day 2 Topic 4: Databases and literature search;  1 Lecture, discussion, quiz  2 Lecture, discussion, quiz  1 Lecture, discussion, quiz  2 Lecture, discussion, quiz  3 Participation, discussion  Topic 5: Academic writing and presentation  1 Lecture, discussion, quiz  1 Lecture, discussion, quiz  1 Lecture  2 Ouiz / short exercise  2 Ouiz / short exercise  3 Participation Discussion performance  1 Lecture, discussion performance  1 Lecture, discussion, quiz  1 Lecture, discussion, quiz  1 Lecture, discussion, quiz  1 Q&A during 40% 9.00-10.00 electure 2 Ouiz / short exercise						
Day 2 Topic 4: Databases and literature search;  1 Lecture, discussion, quiz  2 Lecture, discussion, quiz  2 Lecture, discussion, quiz  3 Participation, discussion  1 Day 3 Topic 5: Academic writing and presentation  1 Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation  1 Lecture, discussion, quiz  1 Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation  1 Lecture, discussion, quiz  1 Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation  1 Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation  1 Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation  1 Q&A during discussion, quiz	3	Participation,		Participation	20%	9.00-11.00
Day 2 Topic 4: Databases and literature search;  1 Lecture, discussion, quiz  2 Lecture, discussion, quiz  2 Lecture, discussion, quiz  3 Participation, discussion  Day 3 Topic 5: Academic writing and presentation  1 Lecture, discussion, quiz  1 . Q&A during lecture 2 . Quiz / short exercise  2 Participation Discussion Participation Discussion Performance  1 . Q&A during lecture 2 . Quiz / short exercise  2 Day 3 Topic 5: Academic writing and presentation  1 Lecture, discussion, quiz  1 . Q&A during lecture 2 . Quiz / short lecture 2 . Quiz / short lecture 2 . Quiz / short		discussion		Discussion		
Lecture, discussion, quiz  Participation, discussion  Day 3  Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Lecture, discussion, quiz  1. Q&A during discussion performance  Participation Discussion performance  1. Q&A during discussion performance  1. Q&A during discussion performance  1. Q&A during discussion, quiz  1. Q&A during discussion, quiz  1. Q&A during discussion, quiz				performance		
Lecture, discussion, quiz  Participation, discussion  Day 3  Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Lecture, discussion, quiz  1. Q&A during discussion performance  Participation Discussion performance  1. Q&A during discussion performance  1. Q&A during discussion performance  1. Q&A during discussion, quiz  1. Q&A during discussion, quiz  1. Q&A during discussion, quiz						
discussion, quiz  Lecture, discussion, quiz  Lecture, discussion, quiz  Participation, discussion  Day 3  Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Lecture, discussion, quiz  Day 3  Lecture, discussion, quiz  Lecture  2. Quiz / short  20%  13.00-15.00  Participation  Discussion  performance  Participation  Discussion  performance  1. Q&A during  lecture  2. Quiz / short  Participation  Discussion  performance	Day 2	Topic 4: Data	bases and literature search;			
2 Lecture, discussion, quiz  Participation, discussion  Day 3 Topic 5: Academic writing and presentation  2. Quiz / short exercise  Participation Discussion Performance  Discussion Performance  1. Q&A during Performance  2. Quiz / short Performance  2. Quiz / short Performance  2. Quiz / short Performance  1. Q&A during Performance  2. Quiz / short	1	Lecture,	Intro to academic resources	1. Q&A during	40%	13.00-14.00
2 Lecture, discussion, quiz  Participation, discussion  Day 3 Topic 5: Academic writing and presentation  Lecture, discussion, quiz  1. Q&A during lecture 2. Quiz / short exercise  Participation Discussion performance  1. Q&A during lecture 2. Quiz / short exercise  1. Q&A during lecture 2. Quiz / short  20%  13.00-15.00  1 Q&A during lecture 2. Quiz / short  9.00-10.00		discussion,	Databases	lecture		
Lecture, discussion, quiz  Participation, discussion  Day 3  Topic 5: Academic writing and presentation  Lecture, discussion, quiz  1. Q&A during lecture 2. Quiz / short exercise  Participation Discussion Discussion performance  1. Q&A during discussion performance  1. Q&A during lecture 2. Quiz / short  20%  13.00-15.00  13.00-15.00  14.00-15.00  13.00-15.00  13.00-15.00  14.00-15.00  15. Q&A during lecture 2. Quiz / short  1. Q&A during lecture 2. Quiz / short		quiz		2. Quiz / short		
discussion, quiz  2. Quiz / short exercise  3 Participation, discussion Discussion Discussion Discussion Discussion Discussion Performance  1 Lecture, Academic writing and presentation 1 Lecture, discussion, quiz 2. Quiz / short 2. Quiz / short 2. Quiz / short				exercise		
discussion, quiz  2. Quiz / short exercise  3 Participation, discussion  Day 3 Topic 5: Academic writing and presentation  1 Lecture, discussion, quiz  1. Q&A during lecture 2. Quiz / short  20%  13.00-15.00  Discussion  performance  1. Q&A during lecture 2. Quiz / short						
quiz  2. Quiz / short exercise  3 Participation, discussion Discussion Discussion performance  1 Lecture, discussion, quiz Day 3 Academic writing and presentation 1 Lecture, discussion, quiz 2. Quiz / short exercise  Participation Discussion	2	Lecture,	Literature search	1. Q&A during	40%	14.00-15.00
Participation, discussion Discussion performance  Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation  1 Lecture, discussion, quiz  Day 3 Topic 5: Academic writing and presentation  1. Q&A during lecture 2. Quiz / short		discussion,		lecture		
Participation, discussion Discussion performance  Topic 5: Academic writing and presentation  Lecture, discussion, quiz  Day 3 Topic 5: Academic writing Participation Discussion performance  1. Q&A during lecture 2. Quiz / short		quiz		2. Quiz / short		
Day 3 Topic 5: Academic writing and presentation  1 Lecture, Academic writing 1. Q&A during discussion, quiz  1 Quiz  1 Quiz / short				exercise		
Day 3 Topic 5: Academic writing and presentation  1 Lecture, Academic writing 1. Q&A during discussion, quiz  1 Quiz  1 Quiz / short						
Day 3 Topic 5: Academic writing and presentation  1 Lecture, Academic writing 1. Q&A during 40% 9.00-10.00 discussion, quiz 2. Quiz / short	3	Participation,		Participation	20%	13.00-15.00
Day 3 Topic 5: Academic writing and presentation  1 Lecture, Academic writing 1. Q&A during 40% 9.00-10.00 lecture 2. Quiz / short		discussion		Discussion		
1 Lecture, Academic writing 1. Q&A during 40% 9.00-10.00 discussion, quiz 2. Quiz / short				performance		
1 Lecture, Academic writing 1. Q&A during 40% 9.00-10.00 discussion, quiz 2. Quiz / short						
discussion, quiz lecture  2. Quiz / short	Day 3	Topic 5: Acad	lemic writing and presentation			
quiz 2. Quiz / short	1	Lecture,	Academic writing	1. Q&A during	40%	9.00-10.00
		discussion,		lecture		
exercise		quiz		2. Quiz / short		
				exercise		

2	Lecture,	Academic presentation	1. Q&A during	40%	10.00-11.00
_	discussion,	readefile presentation	lecture	1070	10.00 11.00
	quiz,		2. Quiz / short		
	presentation		exercise		
			3. Presentation		
3	Participation,		Participation	20%	9.00-11.00
	discussion		Discussion		
			performance		
Day 3	Topic 6: intel	lectual property			
1	Lecture,	Intellectual property	1. Q&A during	80%	13.00-15.00
	discussion,		lecture		
	quiz		2. Quiz / short		
			exercise		
2	Participation,		Participation	20%	13.00-15.00
	discussion		Discussion		
			performance		
Day 4-11	Topic 7: Rese	arch disciplines in molecular and	cellular biosciences		
1	Lecture,	Introduction to research	Participation	100%	9.00-16.00
	Participation	disciplines in molecular and			
	discussion	cellular biosciences			
Day 12	Course reflect	ion and AAR			
1	Student's	To provide students	-	-	9.00-12.00
	Reflection	opportunities to describe their			
		learning experiences received			
		from this course and how it			
		can be applied to their future			
		learning.			
2	After Action	To collect comments,	-	-	9.00-12.00
	Review	suggestions from students for			

	further improvements of the		
	course.		

Note: Some changes might be applied as appropriate.

### Assessment Criteria:

Assessment method	Performance criteria	Scoring rubric
Participation	Engagement level of learner	Active engage (4)
		Fairly active (2-3)
		Inactive (1)
Quiz Correctness level		Raw scores will be adjusted to be
		in a range of % indicated above
	Participation (20%)	Active (4)
		Fairly active (2-3)
		Inactive (1)
	Interpersonal and interpersonal skill	Excellent (4)
	(leadership, teamwork, responsibility,	Good (3)
Discussion	patience, communication, positive attitude,	Fair (2)
Discussion	active listening, critical thinking) (20%)	Underperform (1)
	Demonstrate critical and high-order thinking	Excellent (4)
	skills (60%)	Good (3)
		Fair (2)
		Underperform (1)
	Background and Research Question: Did the	Excellent (4)
	presenter provide an understanding of	Good (3)
	background and clearly present the	Fair (2)
	research question? Provide adequate	Underperform (1)
	information? (20%)	
Presentation	Quality of the Slide: Was the slide well-	Excellent (4)
	organized, insightful, and attractive? (10%)	Good (3)
		Fair (2)
		Underperform (1)
	Spelling & Grammar: Correct spelling and	Excellent (4)
	grammar? (10%)	Good (3)

Assessment method	Performance criteria	Scoring rubric
		Fair (2)
		Underperform (1)
	Quality of the presenter: Storytelling skill. Is	Excellent (4)
	narration engaging? (20%)	Good (3)
		Fair (2)
		Underperform (1)
	Interpersonal and interpersonal skill	Excellent (4)
	(communication, positive attitude, active	Good (3)
	listening, scientific presentation) (40%)	Fair (2)
		Underperform (1)

Student's achievement will be graded using symbols: S and U, based on the criteria as follows:

Percentage range	Grade	Description
60-100	S	Satisfactory
0-59	U	Unsatisfactory

Date of revision: XXXXXXX