

Course Syllabus

MBNS608 Laboratory Rotation Training in Neuroscience

The academic year 2/2025

Course ID and Name: MBNS608 Laboratory Rotation Training in Neuroscience

Course Coordinator: Prof. Banthit Chetsawang, Ph.D. Email: banthit.che@mahidol.ac.th

Instructors:

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2. Assoc. Prof. Nuanchan Chutabhakdikul, Ph.D. (nuanchan.chu@mahidol.ac.th)
3. Assoc. Prof. Vorasith Siripompanich, M.D., Ph.D. (vorasith.sir@mahidol.ac.th)
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7. Lect. Siraprapa Boobphahom, Ph.D. (s.boobphahom@gmail.com)
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9. Lect. Sumeth Klomchitcharoen, Ph.D. (sumeth.klo@mahidol.ac.th)

Credits: 2(0-4-2)

Curriculum: Master of Science Program in Neuroscience (required course)

Semester offering: Second semester

Course learning outcomes:

Upon completion of the course, students are able to:

1. Apply critical knowledge and technologies in neuroscience to develop research projects in neuroscience. (PLO3) P
2. Acquire experience and skills to conduct research in neuroscience with ethics awareness. (PLO1,2,4) P
3. Acquire scientific communication skills by presenting research projects and experimental data to the public via a short seminar. (PLO5) P

Alignment of teaching and assessment methods to course learning outcome:

Course learning outcome	Teaching method	Assessment methods
1. Apply critical knowledge and technologies in neuroscience to develop research projects in neuroscience.	- Mentoring by PI	- Student evaluation by the faculty mentor
2. Acquire experience and skills to conduct research in neuroscience with ethics awareness.	- Teaching by PI - Mentoring by PI - Hands-on laboratory experience	- Student evaluation by the faculty mentor - Research report
3. Acquire scientific communication skills via presenting research projects and experimental data to the public via a short seminar.	- Research presentation and discussions	- Oral presentation score sheet

Course description:

Rotation training in different neuroscience's laboratories; experimental design; performing experiments with research ethics awareness; analyzing and interpreting the experimental data; presentations of the results via a short seminar; research report

Course schedule:

Date: Feb 10 to May 16, 2025

Time: 09.00-12.00 and 13.00-16.00 or Managed by the course coordinator and Faculty mentor

Room RCN Laboratory

Class activity will be held by an onsite laboratory at MB Building, Mahidol University, Salaya Campus

Date/Time	Topic/Details	Number of Hours	Class Activity/ Teaching Media	Lecturer
April 30, 2026/ 10.00-11.00	Course Orientation	1	- Orientation - Short presentation on research	Banthit and All Instructors/PI

			interests, research aspects, or research projects by instructors/Principal Investigator (PI)	(online)
May 7-8, 2026/09.00-12.00 and 13.00-16.00	Student rotation in lab 1 (Each student selects only 1 lab)	12	- active learning, group discussion, - Hands-on laboratory	Designated Instructor
May 12, May 14, 2026/09.00-12.00 and 13.00-16.00	Student rotation in lab 2 (Each student selects only 1 lab)	12	- active learning, group discussion, - Hands-on laboratory	Designated Instructor
May 15, 2026/09.00-12.00 and 13.00-16.00	- Discussion on a selected topic of research interests and research project	6	- active learning, group discussion, research project preparation	Designated mentor
May 18-21, 2026/09.00-12.00 and 13.00-16.00	- Performing experiments with research ethics awareness	24	- Hands-on research experiment	Designated mentor
May 22, 2026/09.00-12.00	- Analysis and interpretation of the experimental data	3	- Discussion on a research project with a faculty mentor - Preparation of research project and experimental data for oral presentation	Designated mentor
May 22, 2026/13.00-16.00	- Research project and experimental data presentation	3	Oral presentation	All Instructors

Assessment Criteria:

Assessment criteria	Assessment method	Scoring rubrics
Student performance evaluation by a faculty mentor 40%	(1) Direct observation	Scoring directly from the performance of the student
Research project 30%	(1) Research project	Scoring directly from the quality of the report
Presentation 30%	(1) Short presentation	(1) Information quality and organization of the topic presented (2) Handling question and answer session (3) Verbal communication and English proficiency (4) Non-verbal communication (5) Visual tools

Student achievements will be graded using symbols: A, B+, B, C+ and C based on the distribution of student scores from the whole course.

Grading system

Final total score (100%)	85 to 100	A	GPA 4.0
	80 to 84	B+	GPA 3.5
	70 to 79	B	GPA 3.0
	60 to 69	C+	GPA 2.5
	50 to 59	C	GPA 2.0
	45 to 49	D+	GPA 1.5
	40 to 44	D	GPA 1.0

Date revised: March 26, 2026

Guideline and evaluation criteria for the presentation session

Criteria	Excellent (score = 5)	Very good (score = 4)	Adequate (score = 3)	Limited (score = 2)	Poor (score = 1)
Information quality and organization of the topic presented (CLO 1)	The main points are explicitly presented with impressive detail and organization. Information is directly linked to the topic of the presentation.	The main points are presented with a good amount of detail. Information is well-organized and linked to the topic given.	The main points are somewhat clear but could add some more detail. Information is organized and linked to the topic given.	The main points are not clear and lack detail. Information is loosely organized and some are off-topic.	The main points are missed and have no detail. Information is disorganized and off-topic.
Handling question and answer session (CLO 1)	Gives full and substantial answers to all questions	Answers questions fully to all questions	Attempted to answer all questions but only some questions were answered fully	Limited answers to questions, or unable to answer some questions	Unable to answer questions
Verbal communication and English language proficiency (CLP 3)	Speaker's voice is very steady, clear, and confident. Spoken language is very fluent and grammatically corrected.	Speaker's voice is steady and confident. Spoken language is fluent and mostly grammatically corrected.	Speaker's voice is moderately confident but could be developed. Spoken language is mediocre and has some grammatical errors.	Speaker's voice is unsteady and lacks confidence. The use of spoken language needs to be improved, and many errors can be recognized.	Speaker fails to deliver a proper presentation orally. Unable to deliver presentation via spoken English language.
Non-verbal communication	Speaker appears to be	Speaker appears to be	Speaker appears to be	The speaker appears	Speaker is uncomfortable

(CLO 3)	comfortable and confident. Effective uses of eye contact and gestures are presented to support the presentation.	fairly confident. Eye contacts and gestures are generally used.	generally at ease. The moderate use of eye contact and gesture but not very effective.	uneasy, insecure, or panicked. Eye contact and gesture are rarely used.	with the presentation. No eye contact or gesture is presented.
Visual tools (CLO 2)	Visual aids are very creative, easy to read, and greatly enhance the presentation.	Visual aids are typically clear and easy to follow.	Visual aids are good in terms of quality, but some points can be improved.	Limited visual aids are used or difficult to help audiences follow the topic.	No visual aids are used, and the presentation is not interesting to audiences.

Rubric for evaluation of research project (total score = 70)

Criteria	Excellent (Score = 4)	Adequate (Score = 3)	Average (Score = 2)	Incompetent (Score = 1)
Introduction, background, and rationale of the research (CLO 1)	Interesting introduction with strong and firm background supporting research proposal.	A well-formulated introduction with plausible background and rationale of the study is presented.	The introduction is mentioned with a loosely constructed background and weak rationale.	Absence of understandable introduction, background, or rationale.
Research question and objective (CLO 1)	The compelling research question is presented with a clearly-stated objective of study.	The reasonable research question is presented and well-related to the research objective.	The research question is not interesting and the objective of the study is not strongly related to the question.	The research question and objective of the study are not mentioned and/or not related to neuroscience.
Research hypothesis (CLO 1)	The conceivable hypothesis is formulated with a strong relationship	The hypothesis is stated and can be related to the research question.	The hypothesis is not mentioned and not based on the research	The hypothesis is not mentioned.

	with a research question.		question.	
Literature review (CLO 1)	Related studies are in-depth reviewed and supportive of the proposal, with multiple theories and research approaches are described.	Most of the past related studies are reviewed, with relevant theories are presented to support the proposal.	A review of recent studies is not fully relevant and does not present sufficient theories to support the proposal.	Investigation of previous related studies is not presented or is disorganized manner.
Methodology (CLO 2)	Novel and well-designed methods are proposed with a robust relationship with research objectives. Human/animal ethical considerations have been approved.	Traditional methods that are related to research objectives are presented in detail. Human/animal ethical considerations have been approved.	Proposed methods are not fully related to research objectives, and not clearly described. Human/animal ethical considerations have not been approved	Proposed methods are not linked with research objectives, and do not lead to any results. Ethical issues are not resolved.
References (CLO 2)	Proper references and in-text citations are given with appropriate citation format.	References and in-text citations are mostly given. The citation format is correct in general with some minor mistakes.	Some references or in-text citations are missed.	References and in-text citations are lacking.
Writing proficiency (CLO 3)	Remarkably well-written proposal with no or very few grammatical errors.	The proposal book shows a good writing system with some grammatical errors.	The proposal book has many grammatical errors and needs major language revision.	The proposal does not write in English or does not write an incomprehensible manner.

Explanation of criteria assessment of student rotation in the lab

The scoring level is according to a student's performance in each criterion.

1 = poor; 2 = unsatisfactory; 3 = sufficient, 4 = good; 5 = very good, NA = not applicable.

Accuracy/precision

The student was very accurate/precise in setting up the experiment, testing the participants and collecting the research data

Planning (realization time schedule) (CLO 2)

The experiment/study is performed within the prescribed period, corrected for documented delays

Organizational skills (CLO 2)

The student demonstrated adequate organizational skills during the set-up and execution of the experiment/study

Data analysis (CLO 3)

The student showed an understanding of the statistical analyses and performed them adequately and independently

Level of independence (CLO 2)

The student worked very independently during each phase of the internship

Taking initiative (CLO 1)

The student took and showed initiative during the internship

Communication (CLO 3)

The student communicated effectively with the supervisor and participants

Processing of feedback (CLO 1)

The student addressed the given feedback adequately

Commitment (CLO 3)

The student was willing to give time and energy to the internship and showed involvement

Dedication (CLO 3)

The student showed up on time and kept promises/appointments that were made

Collaboration (CLO 3)

The student was able and willing to work together with others

Collegiality (CLO 3)

The student showed responsibility in sharing the workload

Update: March 26, 2026