

Course Syllabus  
SIPS 538  
Academic Year 2025  
Department of Physiology  
Faculty of Medicine Siriraj Hospital, Mahidol University

Course ID and name: [SIPS 538: Advanced Neuroscience](#)  
 Course coordinator: Asst. Prof. Sompol Tapechum, M.D., Ph.D.  
 Instructors: Assoc. Prof. Narawut Pakaprot M.D., Ph.D.  
 Asst. Prof. Sompol Tapechum, M.D., Ph.D.  
 Lect. Rujapope Sutiwisesak M.D., Ph.D.  
 Lect. Kanat Chanthongdee M.D., Ph.D.  
 Credits: [1 \(1-0-2\)](#) (lecture – laboratory – self-study)  
 Curriculum: Doctor of Philosophy Program in Medical Physiology  
 Course type:  Core  Required  Electives  
 Semester offering: [02/2025](#)  
 Prerequisite: None  
 Date of Latest Revision: March 4<sup>th</sup>, 2026

**Course Description:**

Sensory Processing, Plasticity, and Perception, Biology of Emotion and Motivation, Cognition and Cognitive process, Aging, Degeneration and Regeneration, Cellular and molecular neuroscience, Demyelination and Remyelination, Integrated nervous system functions, Current research in neuroscience

**Course-level Learning Outcomes (CLOs)**

Upon completion of this course, students are able to:

1. Explain the neurobiological mechanisms related to sensory processing, emotion, motivation, cognitive functions, degeneration and regeneration.
2. Analyze contemporary topics in neuroscience by critically examining key concepts, experimental approaches, theoretical frameworks, methodological strengths and limitations presented in literatures.
3. Create and communicate a coherent, evidence-based synthesis of current neuroscience topics through scholarly oral presentations and well-organized written reports that integrate and interpret relevant literature.

**Constructive Alignment of CLOs and Program’s ELOs**

CLOs	ELO1	ELO2	ELO3	ELO4
1. Explain the neurobiological mechanisms related to sensory processing, emotion,	R			

motivation, cognitive functions, degeneration and regeneration.				
2. Analyze contemporary topics in neuroscience by critically examining key concepts, experimental approaches, theoretical frameworks, methodological strengths and limitations presented in literatures.	P	P	R	
3. Create and communicate a coherent, evidence-based synthesis of current neuroscience topics through scholarly oral presentations and well-organized written reports that integrate and interpret relevant literature.	P	P	R	P

**Remarks:** Show the level of the course management with the symbols I, R, P, and M.

I = PLO is Introduced and Assessed      P = PLO is Practiced and Assessed

R = PLO is Reinforced and Assessed      M = Level of Mastery is Assessed

### **Program's Expected Learning Outcomes**

1. Demonstrate the current medical physiological knowledge for common clinical application.
2. Evaluate the scientific research and major research developments.
3. Perform medical physiology research with a technique in an ethical way to test an idea or hypothesis in an area of interest.
4. Communicate knowledge and ideas of medical physiological research clearly to peers and the scientific community at national level.

### Course Schedule and teaching/assessment plan

No.	Topic	Hours			CLOs	Teaching & learning strategy	Date	Time	Assessment (in-class)	Lecturers
		Lecture	Laboratory	Self-Study						
1	Cognition and Cognitive process	1	-	2	1	Lecture	March 12 <sup>th</sup> , 2026	10.00-11.00	Post-learning exercise	Dr.Sompol
2	Biology of Emotion and Motivation	1	-	2	1	Lecture	March 17 <sup>th</sup> , 2026	10.00-11.00	Post-learning exercise	Dr.Narawut
3	Cellular and molecular neuroscience	3	-	6	2, 3	Reading assignment and Discussion	March 19 <sup>th</sup> , 2026	09.00-12.00	Report	Dr.Sompol
4	Aging, Degeneration and Regeneration	1	-	2	1	Lecture	March 24 <sup>th</sup> , 2026	10.00-11.00	Post-learning exercise	Dr.Rujapope
5	Sensory Processing, Plasticity, and Perception	1	-	2	1	Lecture	March 26 <sup>th</sup> , 2026	10.00-11.00	Post-learning exercise	Dr.Kanat
6	Demyelination and Remyelination	3	-	6	2, 3	Reading assignment and Discussion	April 3 <sup>rd</sup> , 2026	13.00-16.00	Report	Dr.Rujapope
7	Integrated nervous system functions	3	-	6	2, 3	Reading assignment and Discussion	April 9 <sup>th</sup> , 2026	09.00-12.00	Report	Dr.Narawut
8	Current research in neuroscience	3	-	6	2, 3	Reading assignment and Discussion	April 21 <sup>st</sup> , 2026	09.00-12.00	Report	Dr.Kanat
	Summative examination						April 23 <sup>rd</sup> , 2026	09.00-12.00	Onsite examination	
		16		32						

## Course Assignments

Reading assignments: prepare for presentation, discussion in class and writing reports

## Assessment Criteria

30%	Summative examination
20%	Presentation
20%	Participation&Discussion
30%	Report writing

### Presentation

Scores	4 (Exceeding expectation)	3 (Expected performance)	2 (Minor shortcomings)	1 (Major shortcomings)	0 (Failure to show the expected outcome)
Organization	How is the organization of presentation?				
	Very well-organized, logical, interesting, easy to follow	Organized, logical, easy to follow	Somewhat organized, able to follow	Poorly organized, some topical shifts and jumps; hard to follow	Loss of organized sequence, unable to follow
Able to elaborate	How well does the student demonstrate knowledge and understanding of the content?				
	Outstanding, thorough, ability to explain and elaborate	Appropriate, able to elaborate	Some understanding, limited ability to elaborate	Limited knowledge, insufficiently elaborate	Lack of knowledge and unable to elaborate
Use of diagram/graphics	How well are the slides (font, readability, interesting to read and follow)? Are the images, diagrams or graphics related to the presentation?				
	Professional use for reinforcing presentation; easy to read	Use for relating text and presentation	Occasional use for supporting text and presentation	Occasional use; too much text to follow	No diagram/graphics; too much text; lack of interest to follow

### Participation&Discussion

Scores	4	3	2	1	0
How well does the student participate in class by presenting data/asking questions/offering ideas? (Frequency of contributions)	Frequently and voluntarily (*Does not prevent others from answering)	Voluntarily	Responses only after being questioned or named	Rarely, reluctantly	Never
How good is the quality of student's contributions? (Quality of contributions)	Demonstrates comprehensive knowledge and critical thinking skills	Mostly relevant, reflecting understanding of knowledge	Somewhat relevant, reflecting some levels of understanding of knowledge	Not relevant, reflecting insufficient understanding of knowledge	Lacks understanding of knowledge or infrequent contributions
How well does the student behave during presentation? (Behavior in class)	Actively and respectfully pays attention to peers/instructor; full engagement throughout the class	Pays attention to peers/instructor; engages most of the time in class	Listens to peers/instructor or	Sometimes does not listen to peers/instructor; sometimes displays inappropriate behavior	Fails to pay attention; displays inappropriate behavior in class

## Report

Scores	3	2	1	0	Weight
<b>Introduction (Relevance):</b> What is the importance of the article/chapter?	<b>How well does the student state the article's relevance/importance?</b>				x1
	Complete and insightful	Complete and understandable	Not complete, but understandable	Not understandable or not present	
<b>Summary (Recapitulation):</b> A summary of main ideas and important details in each topics.	<b>How well does the student capture key concepts and important details in each topic?</b>				X3
	Captures all; insightful	Captures most	Captures some	Fails to capture any	
<b>Reflection:</b> Discussion of what has been learned. Student's ideas for further research, drawn from or inspired by the article (different from those stated in the articles; can even be more related to student's own research.	<b>How well does the student reflect on the article/learning experience?</b>				X2.5
	Insightful/innovative/interesting and logical ideas; cross-functional	Innovative or interesting; logical ideas	Commendable attempts, at least logical	Not present, inadequate, illogical	
<b>Number of pages (single space)</b>	Appropriate	Too many	Too few	Unacceptable	X0.5
<b>Grammar</b>	80-100% correct	60-79% correct	40-59% correct	Less than 40% correct	X1
<b>Spelling</b>	80-100% correct	60-79% correct	40-59% correct	Less than 40% correct	X1
<b>% Similarity index</b>	30% or less	31-50%	51-80%	More than 80%	X1

GRADE SCALE

A	80	to	100%	with all CLOs passed (minimum 50% each)
B+	65	to	<80%	with all CLOs passed (minimum 50% each)
B	50	to	<65%	with all CLOs passed (minimum 50% each)
F	<50%			
I-1	Retake the exam and/or complete the assigned work within one month after the exam result is announced, if at least one CLO (CLO1-3) is failed.			
I-2	Complete the assigned work and retake the new evaluation within the next semester, if all CLO (CLO1-3) are failed.			
I-3	Repeat the course as soon as it is offered, if all CLO (CLO1-3) are failed.			

### **Appeal Procedure**

Students are able to inquire about their scores or grade directly to the course coordinator either by direct contact, telephone or email within 1 week after the scores or grade is announced. The appealing through the program is also available.