Course Syllabus

SIPS 530

Academic Year 2024

Department of Physiology

Faculty of Medicine Siriraj Hospital, Mahidol University

Course ID and name:	SIPS 530: Fundamentals of Medical Physiology
Course coordinator:	Assoc. Prof. Narawut Pakaprot, MD, PhD
Instructors:	Assoc. Prof. Narawut Pakaprot, MD, PhD
	Assoc. Prof. Wattana Watanapa, MD, PhD
	Assoc. Prof. Suwattanee Kooptiwut, MD, PhD
	Assist. Prof. Sompol Tapechum, MD, PhD
	Assist. Prof. Yodying Dangprapai, MD, PhD
	Dr. Rujapope Sutiwisesak, MD, PhD
Credits:	1 (1-0-2) (lecture – laboratory – self-study)
Curriculum:	Masters of Science Program in Medical Physiology
Course type:	☐ Core ☑ Required ☐ Electives
Semester offering:	01/2024
Prerequisite:	None
Date of Latest Revision:	30/04/2024

Course Description:

Homeostasis; body systems; biophysical principles, resistance-capacitance circuit, time constant, exponential decay; membrane transport; intercellular communication, electrical signaling in excitable cells, resting membrane potential, action potential, neural signal propagation; hormonal receptors, intracellular signal transduction; instrumentation for physiological signal recordings

Course-level Learning Outcomes (CLOs)

Upon completion of this course, students are able to:

1. Explain the fundamental concepts of physiology (ELO1,3,4)
2. Be able to set up the equipment and perform physiological signal recording (ELO1,2,3,4)

3. Apply physiological concepts to biological problems (ELO2,4)

Constructive Alignment of CLOs and Program's ELOs

CLOs	ELO1	ELO2	ELO3	ELO4
1. Explain the fundamental concepts of physiology	I		I	R
2. Be able to set up the equipment and perform physiological signal recording	I	I	I	R
3. Apply physiological concepts to biological problems		I		R

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

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	Assessment (in-class)	Lecturers
		Lecture	Laboratory	Self Study				
1	Homeostasis and body systems	1	-	2	1,3	asynchronous lecture	Post-learning exercise	Dr.Wattana
2	Time constant and exponential delay	2	-	4	1,3	asynchronous lecture	Post-learning exercise	Dr.Wattana
3	Resistance-capacitance circuit	1	-	4	1,3	asynchronous lecture	Post-learning exercise	Dr.Sompol
4	Biophysical principles exercise	2	-	4	1,3	Online synchronous lecture	Q&A	Dr.Wattana
5	Membrane transport	2	-	4	1,3	asynchronous lecture	Post-learning exercise	Dr.Yodying
6	Electrical signaling in excitable cells and resting membrane potential	2	-	2	1,3	asynchronous lecture	Post-learning exercise	Dr.Narawut
7	Action potential and neural signal propagation	1	-	2	1,3	asynchronous lecture	Post-learning exercise	Dr.Narawut

8	Hormone receptors	1	-	2	1,3	asynchronous lecture	Post-learning exercise	Dr.Suwattanee
9	Intracellular signal transduction	1	-	2	1,3	asynchronous lecture	Post-learning exercise	Dr.Suwattanee
10	Q & A	2	-	4	1,3	Online synchronous lecture	Q&A	Dr.Wattana, Dr.Sompol, Dr.Yodying, Dr.Narawut, Dr.Suwattanee
11	Instrumentation for physiological recordings	-	3	1.5	2	Practice (onsite lab)	Observation of behavior	Dr.Rujapope
Total hours of the study		**15**	**3**	**31.5**				

Course Assignments

Read the assigned materials

Assessment Criteria

- Assess the score of the test at the end of the class
- Attend the assigned activities not less than 80%

Appeal Procedure