

Course Syllabus
SIPS 607
Academic Year 2026
Department of Physiology
Faculty of Medicine Siriraj Hospital, Mahidol University

Course ID and name:	SIPS607: Cellular Pathophysiology
Course coordinator:	Assist. Prof. Dr.Rujapope Sutiwisesak MD, PhD
Instructors:	Assoc. Prof. Dr.Sorachai Srisuma MD, PhD Assoc. Prof. Dr.Suwattanee Kooptiwut MD, PhD Dr.Katesirin Ruamyod PhD Assist. Prof. Dr.Rujapope Sutiwisesak MD, PhD Dr.Nathachit Limjunyawong PhD Dr.Punn Augsornworawat PhD
Credits:	2 (2-0-4) (lecture – laboratory – self-study)
Curriculum:	Doctor of Philosophy Program in Medical Physiology
Course type:	☐ Core ☐ Required ☒ Electives
Semester offering:	1
Prerequisite:	None
Date of Latest Revision:	26 June 2026

Course Description:

Cell injury, cell senescence, cell death; cellular mechanisms of atrophy; immune response, inflammation, angiogenesis; reaction of cells to oxidative stress, xenobiotic metabolism; resolution biology, stem cell; cellular mechanisms of repair, remodeling, regeneration and fibrosis; controls of cellular differentiation and carcinogenesis; correlation of microscopically anatomical changes in cells to altered physiology as a basis of diseases in various body systems including techniques for determining such abnormalities

Course-level Learning Outcomes (CLOs)

Upon completion of this course, students are able to:

1. Explain main changes at cellular and/or molecular level, which correlate with pathophysiological alterations and clinical manifestations, in the interested pathological conditions
2. Criticize recent insights in cellular pathophysiology published in international peer-reviewed journals

Constructive Alignment of CLOs and Program's ELOs

CLOs	ELO1	ELO2	ELO3	ELO4
1. Explain main changes at cellular and/or molecular level, which correlate with pathophysiological alterations and clinical manifestations, in the interested pathological conditions	R			
2. Criticize recent insights in cellular pathophysiology published in international peer-reviewed journals		P	P	R

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. Analyze the different concepts, theories, hypotheses related to medical physiological field of interest.
2. Conduct extensive and independent research in medical physiology that expands the frontiers of knowledge in the field of an area of interest.
3. Criticize the research work with a detailed and leading-edge knowledge of physiology in an area of interest.
4. Disseminate new insights of medical physiology to peers and the scientific community at international level.

Course Schedule and teaching/assessment plan

No.	Topic	Hours			Date & Time	CLOs	Teaching & learning strategy	Assessment (in-class)	Lecturers
		Lecture	Laboratory	Self-Study					
1	Course introduction	1			Mon, August 3; 5:00 – 6:00pm		Online synchronous		Dr.Rujapope
2	Cellular responses to injury: adaptation and injury	2		4	Tue, August 4; 5:00 – 7:00pm	1	VDO asynchronous	Post-learning exercise	Dr.Sorachai
3	Cellular damage: cell death and cellular dysfunction	2		4	Tue, August 11; 5:00 – 7:00pm	1	VDO asynchronous	Post-learning exercise	Dr.Katesirin
4	Cellular senescence & aging	2		4	Tue, August 18; 5:00 – 7:00pm	1	VDO asynchronous	Post-learning exercise	Dr.Rujapope
5	Immune response & inflammation	2		4	Wed, August 19; 5:00 – 7:00pm	1	VDO asynchronous	Post-learning exercise	Dr.Nathachit
6	Repair, fibrosis, resolution	2		4	Tue, August 25; 5:00 – 7:00pm	1	VDO asynchronous	Post-learning exercise	Dr.Sorachai
7	Cell differentiation and carcinogenesis	2		4	Wed, August 26; 5:00 – 7:00pm	1	VDO asynchronous	Post-learning exercise	Dr.Punn
8	Formative evaluation, Q&A	3		6	Mon, August 31; 5:00 – 8:00pm	1	Online synchronous		Faculty
9	Summative evaluation 1 (Topic 2-7)				Fri, September 4; 4:00 – 6:00pm		Onsite		
10	Cellular senescence in developing cancer treatment	3		6	Thu, September 10; 5:00 – 8:00pm	1, 2	Online synchronous	Rubric (Discussion and Presentation)	Dr.Rujapope
11	Ion Channel Disease: From Cellular Dysfunction to Cell Death	3		6	Thu, September 17; 5:00 – 8:00pm	1, 2	Online synchronous	Rubric (Discussion and Presentation)	Dr.Katesirin
12	Pathophysiology of pancreatic beta cell apoptosis	3		6	Mon, September 21; 5:00 – 8:00pm	1, 2	Online synchronous	Rubric (Discussion and Presentation)	Dr.Suwattanee
13	Immune response in COVID-19	3		6	Thu, October 1; 5:00 – 8:00pm	1, 2	Online synchronous	Rubric (Discussion and Presentation)	Dr.Nathachit
14	Regenerative Medicine and its Potential Impact on Human Health	3		6	Thu, October 8; 5:00 – 8:00pm	1, 2	Online synchronous	Rubric (Discussion and Presentation)	Dr.Punn
15	Summative evaluation 2 (Topic 10-14)				Fri, October 16; 4:00 – 7:00pm		Onsite		
Total hours of the study		31		60					

Course Assignments

- Presentation: cellular pathophysiology of the assigned topic; 1 topic for each student
- Reflection report at the end of the course

Assessment Criteria

CLO	Assessment	Proportion (%)
1	Summative evaluation 1 (from topic 2-7)	30
	Summative evaluation 2 (from topic 10-14)	20
2	Group discussion (rubric, during topic 10-14)	20
	Assigned topic presentation (rubric)	10
	Reflection report (rubric)	20

Evaluation of Student Performance in Class Participation and Discussion

	4	3	2	1	0
How well does the student prepare for the class?	Very well-prepared, researches extra resources for the class	Studies all the assigned materials with clear understanding	Studies most of the assigned materials	Has not finished preparing for the class as assigned	Does not prepare for the class
How well does the student demonstrate knowledge and understanding of the content?	Outstanding ability to conceptualize and relate theory to practice or scenario	Comprehensive knowledge but some ability to conceptualize essential ideas	Relevant knowledge but some/limited ability to conceptualize ideas	Limited knowledge and ability to draw out relevant concepts	Lack of knowledge with lack of awareness that concept exists.
How well does the student participate the class by presenting data/asking questions/offering ideas?	Consistently and voluntarily	Frequently and voluntarily	Occasionally, marginal effort, Responses after being questioned or named	Rarely, reluctantly	Never
Punctuality	On time / Early	Late $\leq$ 1 min	Late >1 - ≤ 5 min	Late >5 - ≤ 10 min	Late >10 min or Absent

Evaluation of Student Presentation

	4	3	2	1	0
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
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
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

Evaluation of Student Report

	3	2	1	0	Weight
How well does the student state the article's relevance/importance?	Complete and insightful	Complete and understandable	Not complete but understandable	Not understandable or not present	X1
How well does the student capture key concepts and important details in each topic?	Captures all; insightful	Captures most	Captures some	Fails to capture any	X3

	3	2	1	0	Weight
How well does the student reflect on the article / learning experience?	Insightful / Innovative / Interesting and logical ideas; cross-functional	Innovative or interesting; logical ideas	Commendable attempts, at least logical	Not present, inadequate, illogical	X2.5
Number of pages (single space)	Appropriate	Too many	Too few	Unacceptable	X0.5
Grammar	80-100% correct	60-79% correct	40-59% correct	Less than 40%	X1
Spelling	80-100% correct	60-79% correct	40-59% correct	Less than 40%	X1
% Similarity index	≤30%	31-50%	51-80%	>80%	X1

Grade scale

A-B	Passing grade
A	Score 80% to 100%, with passing all CLOs (minimum 50% each)
B+	Score 65% to <80%, with passing all CLOs (minimum 50% each)
B	Score 50% to <65%, with passing all CLOs (minimum 50% each)
F	Score <50%
I	Score >50% but Fail at least 1 CLO, actions based on CLO status:
I-1	Retake the exam and/or complete the assigned work within one month after the exam results are announced, if at least one CLO (CLO1-3) is failed.
I-2	Complete the assigned work and undergo a new evaluation within the next semester if all CLOs are failed.
I-3	Repeat the course when it is next offered, if all CLOs are failed.

Appeal Procedure

Students may appeal academic assessment results by submitting a written request to the course coordinator within 7 days of grade release. The appeal will be reviewed by the course committee according to Faculty of Medicine Siriraj Hospital academic regulations.