INSTRUCTIONAL TEACHING DESIGN (BRP)

ANATOMY AND PHYSIOLOGY

by

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Undergraduate Program in Physics
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2020

UNIVERSITY OF INDONESIA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
UNDERGRADUATE PHYSICS

INSTRUCTIONAL TEACHING DESIGN

Course Name	Anatomy and Physiology	**Credit(s)**	**Prerequisite Course(s)**	**Requisite Course(s)**	**Integration Between Other Courses**
Course Code	SCPH603717	2	General Biology	Radiobiology	None
Course Branch	-				
Semester	6/7				
Lecturer(s)	dr. Nurhadi Ibrahim, Ph.D.				
Course Description	*By completing this course, physics students with interest in medical physics and biophysics will be able to describe the anatomical structure and physiological mechanisms of homeostasis in the human's body in daily lives to solve existing problems, under the applicable laws of Physics and Biology. The language used in this course is Indonesian.*				

Program Learning Outcomes (PLO)	
PLO 1	.Applying the concepts of medical physics and biophysics.

PLO 2	Formulating problems and solving physics and its application, as well as interdisciplinary problems related to science and mathematics clusters critically, creatively, and innovatively.
PLO 3	Applying the basic concepts of physics in the community and practical life, as well as identifying and adapting to new things.
PLO 4	Developing and deepening the knowledge gained in the bachelor degree program in a sustainable manner, and being able to continue to the master and doctoral education level.
Course Learning Outcomes (CLO)	
CLO	Students can describe the anatomical structure and physiological mechanisms of homeostasis in the human's body in daily lives to solve existing problems.
Sub-CLO(s)	
Sub-CLO 1	To identify anatomical structure in daily lives to solve existing problems.
Sub-CLO 2	To describe physiological mechanisms of homeostasis in the human's body in daily lives to solve existing problems.

Study Materials	• Anatomical nomenclature • Human bone • Human brain • Spinal column • Thorax • Abdomen • Nerve system • Respiratory system • Digestive system • Urinary system • Reproduction system • Circuclation system • Pathology
References	1. R. Putz dan R. Pabst, *Atlas Anatomi Manusia Sobotta*, EGC, 2010. 2. Serwood, *Fisologi Manusia: dari sel ke sistem*, EGC, 2001

TEACHING PLAN

Week	Sub-CLOs	Study Materials [References]	Teaching Method [Time Required]	Teaching Modality	Learning Experiences		Sub-CLO Achievement Indicator	Sub-CLOs Weight on Course (%)
					Orientation; Exercise; Feedback		General Indicator; Specific Indicator	
					Online	Offline		
1	**Introduction to course**							
2	Sub-CLO 1	• Anatomical nomenclature **[References]** [1]	Interactive learning, question-based learning, self-directed study, discussion **[Time Required]** 100 minutes	**Syncronous** msTeams, Gmeet **Asyncronous** EMAS	**Orientation:** Introduction to topic (20%) **Exercise:** 1. Lecture 2. Topic discussion 3. Papers presentation (30%) **Feedback:** Lecturer feedback and question and answer (30%)	**Exercise:** Scientific papers writing with group (30%)	**General Indicator:** Able to identify anatomical nomenclature of human's body. **Specific Indicator:** Able to explain the relation between organs.	8.33%
3	Sub-CLO 1	• Human bone **[References]** [1]	Interactive learning, question-based learning, self-directed study, discussion	**Syncronous** msTeams, Gmeet **Asyncronous** EMAS	**Orientation:** Introduction to topic (20%) **Exercise:** 1. Lecture 2. Topic discussion 3. Papers presentation	**Exercise:** Scientific papers writing with group (30%)	**General Indicator:** Able to name human bones. **Specific Indicator:** Able to explain the relation between bones.	8.33%

			[Time Required] 100 minutes		(30%) **Feedback:** Lecturer feedback and question and answer (30%)			
4	Sub-CLO 1	• Human brain **[References]** [1]	Interactive learning, question-based learning, self-directed study, discussion **[Time Required]** 100 minutes	**Syncronous** msTeams, Gmeet **Asyncronous** EMAS	**Orientation:** Introduction to topic (20%) **Exercise:** 1. Lecture 2. Topic discussion 3. Papers presentation (30%) **Feedback:** Lecturer feedback and question and answer (30%)	**Exercise:** Scientific papers writing with group (30%)	**General Indicator:** Able to name parts of human brain. **Specific Indicator:** Able to explain the relation between brain region.	8.33%
5	Sub-CLO 1	• Spinal column **[References]** [1]	Interactive learning, question-based learning, self-directed study, discussion **[Time Required]** 100 minutes	**Syncronous** msTeams, Gmeet **Asyncronous** EMAS	**Orientation:** Introduction to topic (20%) **Exercise:** 1. Lecture 2. Topic discussion 3. Papers presentation (30%) **Feedback:** Lecturer feedback and question and answer (30%)	**Exercise:** Scientific papers writing with group (30%)	**General Indicator:** Able to name parts of spinal column **Specific Indicator:** Able to explain the function and shape of spinal column.	8.33%

6	Sub-CLO 1	• Thorax **[References]** [1]	Interactive learning, question-based learning, self-directed study, discussion **[Time Required]** 100 minutes	**Syncronous** msTeams, Gmeet **Asyncronous** EMAS	**Orientation:** Introduction to topic (20%) **Exercise:** 1. Lecture 2. Topic discussion 3. Papers presentation (30%) **Feedback:** Lecturer feedback and question and answer (30%)	**Exercise:** Scientific papers writing with group (30%)	**General Indicator:** Able to name parts of thorax. **Specific Indicator:** Able to explain the function and shape of thorax.	8.33%
7	Sub-CLO 1	• Abdomen **[References]** • [1]	Interactive learning, question-based learning, self-directed study, discussion **[Time Required]** 100 minutes	**Syncronous** msTeams, Gmeet **Asyncronous** EMAS	**Orientation:** Introduction to topic (20%) **Exercise:** 1. Lecture 2. Topic discussion 3. Papers presentation (30%) **Feedback:** Lecturer feedback and question and answer (30%)	**Exercise:** Scientific papers writing with group (30%)	**General Indicator:** Able to name parts of abdomen. **Specific Indicator:** Able to explain the function and shape of abdomen.	8.33%
Mid-Term Exam								
9	Sub-CLO 2	• Nerve system **[References]** [2]	Interactive learning, question-based learning, self-	**Syncronous** msTeams, Gmeet	**Orientation:** Introduction to topic (20%)	**Exercise:** Scientific papers writing with group	**General Indicator:** Able to describe the nerve system.	7.14%

			directed study, discussion **[Time Required]** 100 minutes	**Asyncronous** EMAS	**Exercise:** 1. Lecture 2. Topic discussion 3. Papers presentation (30%) **Feedback:** Lecturer feedback and question and answer (30%)	(30%)	**Specific Indicator:** Able to explain the mechanism of nerves	
10	Sub-CLO 2	• Respiratory system **[References]** [2]	Interactive learning, question-based learning, self-directed study, discussion **[Time Required]** 100 minutes	**Syncronous** msTeams, Gmeet **Asyncronous** EMAS	**Orientation:** Introduction to topic (20%) **Exercise:** 1. Lecture 2. Topic discussion 3. Papers presentation (30%) **Feedback:** Lecturer feedback and question and answer (30%)	**Exercise:** Scientific papers writing with group (30%)	**General Indicator:** Able to describe the respiratory cycle. **Specific Indicator:** Able to explain the mechanism of respiration.	7.14%
11	Sub-CLO 2	• Digestive system **[References]** [2]	Interactive learning, question-based learning, self-directed study, discussion **[Time Required]** 100 minutes	**Syncronous** msTeams, Gmeet **Asyncronous** EMAS	**Orientation:** Introduction to topic (20%) **Exercise:** 1. Lecture 2. Topic discussion 3. Papers presentation (30%) **Feedback:**	**Exercise:** Scientific papers writing with group (30%)	**General Indicator:** Able to describe the digestion cycle. **Specific Indicator:** Able to explain the mechanism of digestion.	7.14%

					Lecturer feedback and question and answer (30%)			
12	Sub-CLO 2	• Urinary system **[References]** [2]	Interactive learning, question-based learning, self-directed study, discussion **[Time Required]** 100 minutes	**Syncronous** msTeams, Gmeet **Asyncronous** EMAS	**Orientation:** Introduction to topic (20%) **Exercise:** 1. Lecture 2. Topic discussion 3. Papers presentation (30%) **Feedback:** Lecturer feedback and question and answer (30%)	**Exercise:** Scientific papers writing with group (30%)	**General Indicator:** Able to describe the urinary cycle. **Specific Indicator:** Able to explain the mechanism of urination and filtration.	7.14%
13	Sub-CLO 2	• Reproduction system **[References]** • [2]	Interactive learning, question-based learning, self-directed study, discussion **[Time Required]** 100 minutes	**Syncronous** msTeams, Gmeet **Asyncronous** EMAS	**Orientation:** Introduction to topic (20%) **Exercise:** 1. Lecture 2. Topic discussion 3. Papers presentation (30%) **Feedback:** Lecturer feedback and question and answer (30%)	**Exercise:** Scientific papers writing with group (30%)	**General Indicator:** Able to describe the reproduction cycle. **Specific Indicator:** Able to explain the mechanism of reproduction.	7.14%
14	Sub-CLO 2	• Circulation system **[References]**	Interactive learning, question-based learning, self-	**Syncronous** msTeams, Gmeet	**Orientation:** Introduction to topic (20%)	**Exercise:** Scientific papers writing with group	**General Indicator:** Able to describe the circulation cycle.	7.14%

		• [2]	directed study, discussion **[Time Required]** 100 minutes	**Asyncronous** EMAS	**Exercise:** 1. Lecture 2. Topic discussion 3. Papers presentation (30%) **Feedback:** Lecturer feedback and question and answer (30%)	(30%)	**Specific Indicator:** Able to explain the mechanism of blood circulation.	
15	Sub-CLO 2	• Pathology system **[References]** • [2]	Interactive learning, question-based learning, self-directed study, discussion **[Time Required]** 100 minutes	**Syncronous** msTeams, Gmeet **Asyncronous** EMAS	**Orientation:** Introduction to topic (20%) **Exercise:** 1. Lecture 2. Topic discussion 3. Papers presentation (30%) **Feedback:** Lecturer feedback and question and answer (30%)	**Exercise:** Scientific papers writing with group (30%)	**General Indicator:** Able to name existing pathology. **Specific Indicator:** Able to explain the mechanism of existing pathology.	7.14%
Final Exam								

*) Syncronous: Teaching is done through real-time interaction between lecturer and student either through video conference or messaging. Asyncronous: Teaching is done through a forum or e-Learning system that don’t need real time interaction and can be done in a span of days or weeks.

ASSIGNMENT DESIGN

Week	Assignment Name	Sub-CLO	Assignment	Scope	Working Procedure	Deadline	Outcome
2-7, 9-15	Papers	SUB-CLO 1-2	Group papers	• Respective materials of the week	Group work, take home	1 semester	Article/Papers
2-7, 9-15	Presentation	SUB-CLO 1-2	Group presentation	• Respective materials of the week	Group work, take home	1 semester	Written report
8	Mid-Term Exam	SUB-CLO 1	Problem set	• Anatomical nomenclature • Human bone • Spinal column • Thorax • Abdomen	Mid-term exam on EMAS	1 semester	Presentation
16	Final Exam	SUB-CLO 2	Problem set	• Nerve system • Respiratory system • Digestive system • Urinary system • Reproduction • Circulation system • Pathology	Final exam on EMAS	1 semester	Article/Papers

ASSESMENT CRITERIA (LEARNING OUTCOME EVALUATION)

Evaluation Type	Sub-CLOs	Assessment Type	Frequency	Evaluation Weight (%)
Papers	1-2	Group papers	1 per week	30
Presentation	1-2	Group presentation	1 per week	20
Mid-term Exam	1	Problem set on EMAS	1	25
Final Exam	2	Problem set on EMAS	1	25
Total				**100**

Grading Criteria

Grading is based on University of Indonesia guideline.

Score Point	Grade	Weight
85—100	A	4,00
80—<85	A-	3,70
75—<80	B+	3,30
70—<75	B	3,00
65—<70	B-	2,70
60—<65	C+	2,30
55—<60	C	2,00
40—<55	D	1,00
<40	E	0,00

Assessment Rubric:

A. Criteria of Group Paper and Presentation

Criteria	A (90)	B (75)	C (60)	D (50)
Organizatiton (Overall sequence, flow, and transition)	Information is presented in an effective sequence. The excellent structure of paragraphs and transitions improves readability and comprehension. An Executive summary or abstract is presented beforehand, allowing readers to easily follow the rest of the report.	Information is logically presented through paragraphs and transitions. Order of ideas within sections may confuse the readers.	Information is scattered and needs further development.	A clear sequence of paragraphs is not found, no progressive flow of ideas. Details and examples are disorganized, difficult to follow and understand.
Information quality	Supporting details are specific to the topic and provide necessary information.	Some details do not support the topic of the report.	Details are a bit vague.	Unable to find specific details.

Introduction	The introductory paragraph is clearly stated, has a sharp focus, novel, and increases the report's impact.	The introductory paragraph is clearly stated and has a sharp focus.	The introductory paragraph is not clear.	The introductory paragraph is not clear.
Summary	Summarize paragraphs, engaging, clear, and effective conclusion increases the report's impact.	Summarize the report and providing conclusion.	The closing paragraph is remotely related to the topic of the report.	The introductory paragraph is not clear.
Use of language: diction, grammar, structure of sentence.	Sentences are complete, grammatical, and flow together easily. The word is chosen for its proper meaning.	For the most part, sentences are complete, grammatical, and flow together easily. Every mistake is minor and does not distract the reader. Repetition of words and phrases is avoided.	Minor mistakes in sentence structure and grammar are frequent enough to distract the reader and interfere with meaning. There are unnecessary repetitions of words and phrases.	Major mistakes in sentence structure and grammar are frequent enough to distract the reader and interfere with meaning. There are unnecessary repetitions of words and phrases.
Use of visuals: numbers, graphs & pictures	All numbers, graphics, and images used are accurate, consistent with the text, and good quality. Appropriate and consistent labeling.	Most of the numbers, graphics, and images used are accurate, consistent with the text, and good quality. Some labels are imprecise.	Few of the numbers, graphics, and images used are accurate, consistent with text, and good quality. They are not properly labeled.	Numbers, graphics, and images are poor quality, have lots of inaccuracies, followed by mislabelling or none at all.

B. Criteria of Mid-Term Exam and Final Exam

1) Able to write down their ideas and use it to solve a problem (25%);
2) Able to use the correct concept in solving the problem (35%);
3) Able to formulate the final result correctly (30%);
4) Able to use the appropriate dimension, units, and significant figures (10%);

C. Lecture Affective Rubric

Criteria	5	4	3	2	1
Communication	Students provide specific and easy-to-understand explanations in the discussion and use various tools/methods to facilitate understanding.	Students provide specific and partly easy-to-understand explanations in the discussion and use various tools/methods to facilitate understanding.	Students provide less specific explanations; some are difficult to understand in discussions and do not use various tools/methods to facilitate understanding.	Students provide explanations that are non-specific and difficult to understand in the discussion and did not use various tools/methods to facilitate understanding.	Students provide explanations that are non-specific and difficult to understand in the discussion and did not use various tools/methods to facilitate understanding.
Class Atmosphere	Students use polite language in their interactions, contribute actively, and do not dominate the discussion.	Students use polite language in their interactions, contribute partly, and do not dominate the discussion.	Students use less polite language in their interactions, contribute partly, and dominate the discussion.	Students use less polite language in their interactions, does not contribute much, and dominates the discussion.	Students use impolite language in their interactions, does not contribute, and dominates the discussion.
Openness	Students give feedbacks and value the opinions of others.	Students give some feedbacks and value the opinions of others.	Students give few feedbacks and value less the opinions of others.	Students give few feedbacks and does not value the opinions of others.	Students does not give feedbacks and does not value the opinions of others.
Behavior	Students listen very well and behave politely in class.	Students listen well and behave politely in class.	Students listen well and behave politely in class.	Students do not pay attention and behave casually in class.	Students do not listen and behave disrespectfully in class.