	Universitas Negeri Surabaya Faculty of Sports and Health Sciences, Physical Education, Health & Recreation Undergraduate Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Exercise Physiology	8520102045	Compulsory Study Program Subjects	T=2	P=0	ECTS=3.18	2	July 16, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
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Learning model: Case Studies

Program Learning Outcomes (PLO)

PLO study program that is charged to the course

Program Objectives (PO)

PO - 1	Able to demonstrate a responsible attitude towards work in their field of expertise independently
PO - 2	Able to make appropriate decisions in the context of solving problems in their field of expertise, based on the results of information and data analysis
PO - 3	Able to solve sports education problems and make decisions based on science
PO - 4	Master theoretical concepts in the field of knowledge and theoretical concepts of physical education in depth, and be able to formulate procedural problem solving

PLO-PO Matrix

P.O
PO-1
PO-2
PO-3
PO-4

PO Matrix at the end of each learning stage (Sub-PO)

P.O	Week															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PO-1																
PO-2																
PO-3																
PO-4																

Short Course Description: This course provides understanding and mastery of muscle physiology, energy supply, natural recovery, environmental influences, warming-up and cooling down physiology, cardiorespiratory system, VO2max, as well as working smart, collaborating in groups and being responsible for their duties. The material is delivered using a problem based learning approach, lectures, discussions, questions and answers, assignments. Assessment is carried out by performance, written tests and portfolios.

References

Main :

1. Hasiane, Juanita Dolores dan Wahjuni, Endang Sri. 2017. Fisiologi Olahraga, buku ajar. Surabaya : Unesa University Press.
2. Enoka, R.M. and Duchateau, J. 2019. Chapter 7 - Muscle Function: Strength, Speed, and Fatigability. Elsevier. pp. 129–157. https://doi.org/10.1016/B978-0-12-814593-7.00007-4.
3. Hammond, K.M. et al. 2019. Chapter 11 - Carbohydrate Metabolism During Exercise. Elsevier. pp. 251–270. https://doi.org/10.1016/B978-0-12-814593-7.00011-6.
4. Kilarski, W. 2018. Functional Morphology of the Striated Muscle, Muscle and Exercise Physiology. Elsevier. pp. 27-38. https://doi.org/10.1016/B978-0-12-814593-7.00002-5.
5. Sherwood, L. 2019. Human Physiology: From cells to systems, 9th revised ed. The Neuroscientist.

Supporters:

Supporting lecturer:
Dr. dr. Endang Sri Wahjuni, M.Kes.
Irma Febriyanti, S.Or., M.Kes.
dr. Tri Putra Rahmad Ramadani, Sp.Rad.
dr. Nur Shanti Retno Pembayun, M.Or.
Aby Nugrah Septanto, S.Kep.,Ns., M.Sc.
Arifah Kaharina, S.Pd., M.Kes.
Dr. Novadri Ayubi, S.Or., M.Kes.

Week-	Final abilities of each learning stage (Sub-PO)	Evaluation		Help Learning, Learning methods, Student Assignments, [Estimated time]		Learning materials [References]	Assessment Weight (%)
		Indicator	Criteria & Form	Offline (*offline*)	Online (*online*)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Able to explain cell physiology, physiological principles of exercise, and its scope	1. Explain cell physiology 2. Explain the meaning of exercise physiology 3. Explain the scope of exercise physiology	**Criteria:** Full marks are obtained if you do all the questions correctly. **Form of Assessment** : Participatory Activities	Learning Form: Face-to-face lecture Learning Method: Lecture, discussion and question and answer [TM : 1 (2x50')] Student assignment: Independent task to search for literature and summarize the mechanism of muscle contraction [PT BM : (1 1) x (2X60')] 2 X 50	Learning Form: Virtual face-to-face lecture via vilearning and zoom Learning Method: Lecture, discussion and question and answer [TM : 1 (2x50')] Student assignment: Independent assignment via assignment on vilearning searching for literature and summarizing the mechanism of muscle contraction [PT BM : (1 1) x (2X60')] 2 x 50	**Material:** Cell physiology, understanding of exercise physiology and its scope. **References:** *Hasiane, Juanita Dolores and Wahjuni, Endang Sri. 2017. Sports Physiology, textbook. Surabaya: Unesa University Press.*	10%

2	Able to understand and explain the structure and organelles of cells and their functions	1. Explain the structure of cells and their organelles. 2. Explain the function of cell organelles.	**Criteria:** Full marks are obtained if you do all the questions correctly. **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment, Tests	Learning Form: Face-to-face lecture Learning Method: Lecture, Problem based learning/case study [TM : 1 (2x50')] • Phase 1: Learner orientation to the problem; The lecturer conveys the problem that will be solved as a group. Students observe and understand the problem presented by the lecturer or obtained from the recommended reading material. • Phase 2: Organize students to learn; The lecturer ensures that each member understands their respective assignments. Students discuss and divide assignments to find the data/materials/tools needed to solve the problem • Phase 3: Guiding individual and group investigations; Lecturers monitor students' involvement in collecting data/materials during the investigation process. Students conduct investigations (search for data/references/sources) for group discussion materials • Phase 4: Develop and present assignment results; and the lecturer monitors the discussion and guides the creation of each group's assignments ready to be presented. Students hold discussions to produce problem-solving solutions and the results are presented • Phase 5: Analyze and evaluate the problem-solving process. Lecturer: guides the presentation and encourages groups to give awards and input to other groups. Students. Each group makes a presentation, the other groups give appreciation. The activity continues by summarizing/making conclusions based on input obtained from other groups. 2 X 50	Learning Form: Virtual face-to-face lecture via vilearning and zoom Learning Method: Lecture, Problem based learning/case study [TM : 1 (2x50')] • Phase 1: Orientation of students on the problem; The lecturer conveys the problem that will be solved as a group. Students observe and understand the problem presented by the lecturer or obtained from the recommended reading material. • Phase 2: Organize students to learn; The lecturer ensures that each member understands their respective assignments. Students discuss and divide assignments to find the data/materials/tools needed to solve the problem • Phase 3: Guiding individual and group investigations; Lecturers monitor students' involvement in collecting data/materials during the investigation process. Students conduct investigations (search for data/references/sources) for group discussion materials • Phase 4: Develop and present assignment results; and the lecturer monitors the discussion and guides the creation of each group's assignments ready to be presented. Students hold discussions to produce problem-solving solutions and the results are presented • Phase 5: Analyze and evaluate the problem-solving process. Lecturer: guides the presentation and encourages groups to give awards and input to other groups. Students. Each group makes a presentation, the other groups give appreciation. The activity continues by summarizing/making conclusions based on input obtained from other groups. 2 x 50	**Material:** Structure and function of cell organelles **Reference:** *Sherwood, L. 2019. Human Physiology: From cells to systems, 9th revised ed. The Neuroscientist.*	5%

3	Able to conclude muscle function and work and fatigue	1. Explain muscle types 2. Explain the mechanism of skeletal muscle contraction 3. Explain the function of skeletal muscles.	**Criteria:** Full marks are obtained if you do all the questions correctly. **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment, Tests	Learning Form: Face-to-face lecture Learning Method: Lecture, Problem based learning/case study [TM : 1 (2x50')] • Phase 1: Learner orientation to the problem; The lecturer conveys the problem that will be solved as a group. Students observe and understand the problem presented by the lecturer or obtained from the recommended reading material. • Phase 2: Organize students to learn; The lecturer ensures that each member understands their respective assignments. Students discuss and divide assignments to find the data/materials/tools needed to solve the problem • Phase 3: Guiding individual and group investigations; Lecturers monitor students' involvement in collecting data/materials during the investigation process. Students conduct investigations (search for data/references/sources) for group discussion materials • Phase 4: Develop and present assignment results; and the lecturer monitors the discussion and guides the creation of each group's assignments ready to be presented. Students hold discussions to produce problem-solving solutions and the results are presented • Phase 5: Analyze and evaluate the problem-solving process. Lecturer: guides the presentation and encourages groups to give awards and input to other groups. Students. Each group makes a presentation, the other groups give appreciation. The activity continues by summarizing/making conclusions based on input obtained from other groups. 2 X 50	Learning Form: Virtual face-to-face lecture via vilearning and zoom Learning Method: Lecture, Problem based learning/case study [TM : 1 (2x50')] • Phase 1: Orientation of students on the problem; The lecturer conveys the problem that will be solved as a group. Students observe and understand the problem presented by the lecturer or obtained from the recommended reading material. • Phase 2: Organize students to learn; The lecturer ensures that each member understands their respective assignments. Students discuss and divide assignments to find the data/materials/tools needed to solve the problem • Phase 3: Guiding individual and group investigations; Lecturers monitor students' involvement in collecting data/materials during the investigation process. Students conduct investigations (search for data/references/sources) for group discussion materials • Phase 4: Develop and present assignment results; and the lecturer monitors the discussion and guides the creation of each group's assignments ready to be presented. Students hold discussions to produce problem-solving solutions and the results are presented • Phase 5: Analyze and evaluate the problem-solving process. Lecturer: guides the presentation and encourages groups to give awards and input to other groups. Students. Each group makes a presentation, the other groups give appreciation. The activity continues by summarizing/making conclusions based on input obtained from other groups. 2 x 50	**Material:** Muscle types **References:** *Hasiane, Juanita Dolores and Wahjuni, Endang Sri. 2017. Sports Physiology, textbook. Surabaya: Unesa University Press.* **Material:** Mechanism of muscle contraction **Reference:** *Kilarski, W. 2018. Functional Morphology of the Striated Muscle, Muscle and Exercise Physiology. Elsevier. pp. 27-38. https://doi.org/....*	5%

4	Understand the energy supply system	1. Explain the process of anaerobic metabolism and the energy it produces. 2. Explain the aerobic metabolic process and the energy it produces. 3. Distinguish between metabolic systems that work in various types of physical activity.	**Criteria:** Full marks are obtained if you do all the questions correctly. **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment, Portfolio Assessment	for Learning: Face-to-face lecture Learning Method: Lecture, Problem based learning/case study [TM : 2 (2x50')] • Phase 1: Orientation of students to the problem; The lecturer conveys the problem that will be solved as a group. Students observe and understand the problem presented by the lecturer or obtained from the recommended reading material. • Phase 2: Organize students to learn; The lecturer ensures that each member understands their respective assignments. Students discuss and divide assignments to find the data/materials/tools needed to solve the problem • Phase 3: Guiding individual and group investigations; Lecturers monitor students' involvement in collecting data/materials during the investigation process. Students conduct investigations (search for data/references/sources) for group discussion materials • Phase 4: Develop and present assignment results; and the lecturer monitors the discussion and guides the creation of each group's assignments ready to be presented. Students hold discussions to produce problem-solving solutions and the results are presented • Phase 5: Analyze and evaluate the problem-solving process. Lecturer: guides the presentation and encourages groups to give awards and input to other groups. Students. Each group makes a presentation, the other groups give appreciation. The activity continues by summarizing/making conclusions based on input obtained from other groups. Student assignment: Independent task to differentiate metabolic systems that work in various types of physical activity. [PT BM : (1 1) x (2X60')] 2 X 50	for Learning: Virtual face-to-face lectures via vilearning and zoom Learning Methods: Lecture, Problem based learning/case study [TM : 2 (2x50')] • Phase 1: Orientation of students on problems; The lecturer conveys the problem that will be solved as a group. Students observe and understand the problem presented by the lecturer or obtained from the recommended reading material. • Phase 2: Organize students to learn; The lecturer ensures that each member understands their respective assignments. Students discuss and divide assignments to find the data/materials/tools needed to solve the problem • Phase 3: Guiding individual and group investigations; Lecturers monitor students' involvement in collecting data/materials during the investigation process. Students conduct investigations (search for data/references/sources) for group discussion materials • Phase 4: Develop and present assignment results; and the lecturer monitors the discussion and guides the creation of each group's assignments ready to be presented. Students hold discussions to produce problem-solving solutions and the results are presented • Phase 5: Analyze and evaluate the problem-solving process. Lecturer: guides the presentation and encourages groups to give awards and input to other groups. Students. Each group makes a presentation, the other groups give appreciation. The activity continues by summarizing/drawing conclusions based on input obtained from other groups. Student assignment: Independent assignments through assignments in vilearning distinguish metabolic systems that work in various types of physical activity. [PT BM : (1 1) x (2X60')] 2 x 50	**Material:** Energy systems in sports **References:** *Hasiane, Juanita Dolores and Wahjuni, Endang Sri. 2017. Sports Physiology, textbook. Surabaya: Unesa University Press.*	5%

5	Understand the energy supply system	1. Explain the process of anaerobic metabolism and the energy it produces. 2. Explain the aerobic metabolic process and the energy it produces. 3. Distinguish between metabolic systems that work in various types of physical activity.	**Criteria:** Full marks are obtained if you do all the questions correctly. **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment, Portfolio Assessment	for Learning: Face-to-face lecture Learning Method: Lecture, Problem based learning/case study [TM : 2 (2x50')] • Phase 1: Orientation of students to the problem; The lecturer conveys the problem that will be solved as a group. Students observe and understand the problem presented by the lecturer or obtained from the recommended reading material. • Phase 2: Organize students to learn; The lecturer ensures that each member understands their respective assignments. Students discuss and divide assignments to find the data/materials/tools needed to solve the problem • Phase 3: Guiding individual and group investigations; Lecturers monitor students' involvement in collecting data/materials during the investigation process. Students conduct investigations (search for data/references/sources) for group discussion materials • Phase 4: Develop and present assignment results; and the lecturer monitors the discussion and guides the creation of each group's assignments ready to be presented. Students hold discussions to produce problem-solving solutions and the results are presented • Phase 5: Analyze and evaluate the problem-solving process. Lecturer: guides the presentation and encourages groups to give awards and input to other groups. Students. Each group makes a presentation, the other groups give appreciation. The activity continues by summarizing/making conclusions based on input obtained from other groups. Student assignment: Independent task to differentiate metabolic systems that work in various types of physical activity. [PT BM : (1 1) x (2X60')] 2 X 50	for Learning: Virtual face-to-face lectures via vilearning and zoom Learning Methods: Lecture, Problem based learning/case study [TM : 2 (2x50')] • Phase 1: Orientation of students on problems; The lecturer conveys the problem that will be solved as a group. Students observe and understand the problem presented by the lecturer or obtained from the recommended reading material. • Phase 2: Organize students to learn; The lecturer ensures that each member understands their respective assignments. Students discuss and divide assignments to find the data/materials/tools needed to solve the problem • Phase 3: Guiding individual and group investigations; Lecturers monitor students' involvement in collecting data/materials during the investigation process. Students conduct investigations (search for data/references/sources) for group discussion materials • Phase 4: Develop and present assignment results; and the lecturer monitors the discussion and guides the creation of each group's assignments ready to be presented. Students hold discussions to produce problem-solving solutions and the results are presented • Phase 5: Analyze and evaluate the problem-solving process. Lecturer: guides the presentation and encourages groups to give awards and input to other groups. Students. Each group makes a presentation, the other groups give appreciation. The activity continues by summarizing/drawing conclusions based on input obtained from other groups. Student assignment: Independent assignments through assignments in vilearning distinguish metabolic systems that work in various types of physical activity. [PT BM : (1 1) x (2X60')] 2 x 50	**Material:** Energy systems in sports **References:** *Hasiane, Juanita Dolores and Wahjuni, Endang Sri. 2017. Sports Physiology, textbook. Surabaya: Unesa University Press.*	10%

6	Able to compare the cardiorespiratory system at rest, physical activity, and recovery	1. Explain the anatomy and physiology of the cardiovascular system. 2. Explain changes in the cardiovascular system during rest and exercise. 3. Explain the physiology of blood pressure. 4. Explain how to measure resting HR and HR max	**Criteria:** Full marks are obtained if you do all the questions correctly. **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment, Portfolio Assessment	Learning Form: Face-to-face lecture Learning Method: Lecture, discussion and question and answer [TM : 1 (2x50')] 2 X 50	Learning Form: Virtual face-to-face lecture via vilearning and zoom Learning Method: Lecture, discussion and question and answer [TM : 1 (2x50')] 2 x 50	**Material:** Cardiovascular system **Reference:** *Sherwood, L. 2019. Human Physiology: From cells to systems, 9th revised ed. The Neuroscientist.*	10%
7	Able to compare the cardiorespiratory system at rest, physical activity, and recovery	1. Explain the anatomy and physiology of the cardiovascular system. 2. Explain changes in the cardiovascular system during rest and exercise. 3. Explain the physiology of blood pressure. 4. Explain how to measure resting HR and HR max	**Criteria:** Full marks are obtained if you do all the questions correctly. **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment, Tests	Learning Form: Face-to-face lecture Learning Method: Lecture, discussion and question and answer [TM : 1 (2x50')] 2 X 50	Learning Form: Virtual face-to-face lecture via vilearning and zoom Learning Method: Lecture, discussion and question and answer [TM : 1 (2x50')] 2 x 50	**Material:** Cardiovascular system **Reference:** *Sherwood, L. 2019. Human Physiology: From cells to systems, 9th revised ed. The Neuroscientist.*	10%
8	Sub Summative Exam	Mastering face-to-face material 1 to 7	**Criteria:** Full marks are obtained if you do all the questions correctly. **Form of Assessment** : Project Results Assessment / Product Assessment, Test	Test 2 X 50	Test 2 x 50	**Material:** Meeting materials 1-7 **References:** *Sherwood, L. 2019. Human Physiology: From cells to systems, 9th revised ed. The Neuroscientist.*	0%
9	Analyze VO2max, influencing factors and how to increase it	1. Explain what VO2max is 2. Explain the factors that influence VO2max 3. Explains how to increase VO2Max 4. Practicing the VO2Max measurement test	**Criteria:** Full marks are obtained if you do all the questions correctly. **Form of Assessment** : Participatory Activities	Learning Form: Face-to-face lecture Learning Method: Lecture, discussion and question and answer [TM : 1 (2x50')] 2 X 50	Learning Form: Virtual face-to-face lecture via vilearning and zoom Learning Method: Lecture, discussion and question and answer [TM : 1 (2x50')] 2 x 50	**Material:** Respiratory System **References:** *Hasiane, Juanita Dolores and Wahjuni, Endang Sri. 2017. Sports Physiology, textbook. Surabaya: Unesa University Press.*	5%
10	Analyze VO2max, influencing factors and how to increase it	1. Explain what VO2max is 2. Explain the factors that influence VO2max 3. Explains how to increase VO2Max 4. Practicing the VO2Max measurement test	**Criteria:** Full marks are obtained if you do all the questions correctly. **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment, Practices / Performance	Learning Form: Face-to-face lecture Learning Method: Lecture, discussion and question and answer [TM : 1 (2x50')] 2 X 50	Learning Form: Virtual face-to-face lecture via vilearning and zoom Learning Method: Lecture, discussion and question and answer [TM : 1 (2x50')] 2 x 50	**Material:** Respiratory System **References:** *Hasiane, Juanita Dolores and Wahjuni, Endang Sri. 2017. Sports Physiology, textbook. Surabaya: Unesa University Press.* **Material:** Respiratory System **References:** *Sherwood, L. 2019. Human Physiology: From cells to systems, 9th revised ed. The Neuroscientist.*	5%

11	Understand the physiology of warming up and cooling down.	1. Explain the purpose and function of warming up and the consequences if it is not done 2. Explain the purpose and function of cooling down and the consequences if it is not done	**Criteria:** Full marks are obtained if you do all the questions correctly. **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Learning Form: Face-to-face lecture Learning Method: Lecture, discussion and question and answer [TM : 1 (2x50')] 2 X 50	Learning Form: Virtual face-to-face lecture via vilearning and zoom Learning Method: Lecture, discussion and question and answer [TM : 1 (2x50')] 2 x 50	**Material:** Respiratory System **References:** *Hasiane, Juanita Dolores and Wahjuni, Endang Sri. 2017. Sports Physiology, textbook. Surabaya: Unesa University Press.*	10%

12	Able to analyze the physiology of recovery and energy replenishment	1. Identify the original recovery process after exercise. 2. Comparing the recovery process from anaerobic and aerobic exercise. 3. Comparing anaerobic and aerobic exercise re-energization.	**Criteria:** Full marks are obtained if you do your assignment well. **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment, Tests	Learning Form: Face-to-face lecture Learning Method: Problem based learning/case study [TM : 2 (2x50')] • Phase 1: Learner orientation to the problem; The lecturer conveys the problem that will be solved as a group. Students observe and understand the problem presented by the lecturer or obtained from the recommended reading material. • Phase 2: Organizing students to learn; The lecturer ensures that each member understands their respective assignments. Students discuss and divide assignments to find the data/materials/tools needed to solve the problem • Phase 3: Guiding individual and group investigations; Lecturers monitor students' involvement in collecting data/materials during the investigation process. Students conduct investigations (search for data/references/sources) for group discussion materials • Phase 4: Develop and present assignment results; and the lecturer monitors the discussion and guides the creation of each group's assignments ready to be presented. Students hold discussions to produce problem-solving solutions and the results are presented • Phase 5: Analyze and evaluate the problem-solving process. Lecturer: guides the presentation and encourages groups to give awards and input to other groups. Students. Each group makes a presentation, the other groups give appreciation. The activity continues by summarizing/making conclusions based on input obtained from other groups. Student assignment: Group assignment to compare the recovery process from anaerobic and aerobic exercise [PT BM: (1 1) x (2X60')] 2 X 50	Learning Form: Virtual face-to-face lecture via vilearning and zoom Learning Method: Problem based learning/case study [TM : 2 (2x50')] • Phase 1: Learner orientation to the problem; The lecturer conveys the problem that will be solved as a group. Students observe and understand the problem presented by the lecturer or obtained from the recommended reading material. • Phase 2: Organize students to learn; The lecturer ensures that each member understands their respective assignments. Students discuss and divide assignments to find the data/materials/tools needed to solve the problem • Phase 3: Guiding individual and group investigations; Lecturers monitor students' involvement in collecting data/materials during the investigation process. Students conduct investigations (search for data/references/sources) for group discussion materials • Phase 4: Develop and present assignment results; and the lecturer monitors the discussion and guides the creation of each group's assignments ready to be presented. Students hold discussions to produce problem-solving solutions and the results are presented • Phase 5: Analyze and evaluate the problem-solving process. Lecturer: guides the presentation and encourages groups to give awards and input to other groups. Students. Each group makes a presentation, the other groups give appreciation. The activity continues by summarizing/drawing conclusions based on input obtained from other groups. Student assignment: Assignment group assignments in vilearning compare the recovery process from anaerobic and aerobic exercise [PT BM: (1 1) x (2X60')] 2 x 50	**Material:** Recovery process / recovery from **Readers:** *Hasiane, Juanita Dolores and Wahjuni, Endang Sri. 2017. Sports Physiology, textbook. Surabaya: Unesa University Press.*	5%

13	Able to analyze the physiology of recovery and energy replenishment	1. Identify the original recovery process after exercise. 2. Comparing the recovery process from anaerobic and aerobic exercise. 3. Comparing anaerobic and aerobic exercise re-energization.	**Criteria:** Full marks are obtained if you do your assignment well. **Form of Assessment** : Participatory Activities	Learning Form: Face-to-face lecture Learning Method: Problem based learning/case study [TM : 2 (2x50')] • Phase 1: Learner orientation to the problem; The lecturer conveys the problem that will be solved as a group. Students observe and understand the problem presented by the lecturer or obtained from the recommended reading material. • Phase 2: Organizing students to learn; The lecturer ensures that each member understands their respective assignments. Students discuss and divide assignments to find the data/materials/tools needed to solve the problem • Phase 3: Guiding individual and group investigations; Lecturers monitor students' involvement in collecting data/materials during the investigation process. Students conduct investigations (search for data/references/sources) for group discussion materials • Phase 4: Develop and present assignment results; and the lecturer monitors the discussion and guides the creation of each group's assignments ready to be presented. Students hold discussions to produce problem-solving solutions and the results are presented • Phase 5: Analyze and evaluate the problem-solving process. Lecturer: guides the presentation and encourages groups to give awards and input to other groups. Students. Each group makes a presentation, the other groups give appreciation. The activity continues by summarizing/making conclusions based on input obtained from other groups. Student assignment: Group assignment to compare the recovery process from anaerobic and aerobic exercise [PT BM: (1 1) x (2X60')] 2 X 50	Learning Form: Virtual face-to-face lecture via vilearning and zoom Learning Method: Problem based learning/case study [TM : 2 (2x50')] • Phase 1: Learner orientation to the problem; The lecturer conveys the problem that will be solved as a group. Students observe and understand the problem presented by the lecturer or obtained from the recommended reading material. • Phase 2: Organize students to learn; The lecturer ensures that each member understands their respective assignments. Students discuss and divide assignments to find the data/materials/tools needed to solve the problem • Phase 3: Guiding individual and group investigations; Lecturers monitor students' involvement in collecting data/materials during the investigation process. Students conduct investigations (search for data/references/sources) for group discussion materials • Phase 4: Develop and present assignment results; and the lecturer monitors the discussion and guides the creation of each group's assignments ready to be presented. Students hold discussions to produce problem-solving solutions and the results are presented • Phase 5: Analyze and evaluate the problem-solving process. Lecturer: guides the presentation and encourages groups to give awards and input to other groups. Students. Each group makes a presentation, the other groups give appreciation. The activity continues by summarizing/drawing conclusions based on input obtained from other groups. Student assignment: Assignment group assignments in vilearning compare the recovery process from anaerobic and aerobic exercise [PT BM: (1 1) x (2X60')] 2 x 50	**Material:** Recovery process / recovery from **Readers:** *Hasiane, Juanita Dolores and Wahjuni, Endang Sri. 2017. Sports Physiology, textbook. Surabaya: Unesa University Press.*	5%

14	Able to analyze the influence of the environment on the body's physiology, understand the safe zone in exercising, anticipate the impacts.	1. Explain the role of the environment (weather and altitude differences) in sports. 2. Explain how to anticipate bad environmental impacts. 3. Explain the differences in air composition at low and high places. 4. Explain how to overcome acclimatization.	**Criteria:** Full marks are obtained if you do all the questions correctly. **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Learning Form: Face-to-face lecture Learning Method: Lecture, discussion and question and answer [TM : 1 (2x50')] 2 X 50	Learning Form: Virtual face-to-face lecture via vilearning and zoom Learning Method: Lecture, discussion and question and answer [TM : 1 (2x50')] 2 x 50	**Material:** Sports and the environment (hot environment and altitude) **References:** *Sherwood, L. 2019. Human Physiology: From cells to systems, 9th revised ed. The Neuroscientist.*	5%
15	Able to analyze the influence of the environment on the body's physiology, understand the safe zone in exercising, anticipate the impacts.	1. Explain the role of the environment (weather and altitude differences) in sports. 2. Explain how to anticipate bad environmental impacts. 3. Explain the differences in air composition at low and high places. 4. Explain how to overcome acclimatization.	**Criteria:** Full marks are obtained if you do all the questions correctly. **Form of Assessment** : Participatory Activities	Learning Form: Face-to-face lecture Learning Method: Lecture, discussion and question and answer [TM : 1 (2x50')] 2 X 50	Learning Form: Virtual face-to-face lecture via vilearning and zoom Learning Method: Lecture, discussion and question and answer [TM : 1 (2x50')] 2 x 50	**Material:** Sports and the environment (hot environment and altitude) **References:** *Sherwood, L. 2019. Human Physiology: From cells to systems, 9th revised ed. The Neuroscientist.*	9%
16	Able to analyze the influence of the environment on the body's physiology, understand the safe zone in exercising, anticipate the impacts.	Explain how to overcome acclimatization.	**Criteria:** Full marks are obtained if you do all the questions correctly. **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Test 2 x 50	Test 2 x 50	**Material:** UAS **Literature:** *Hasiane, Juanita Dolores and Wahjuni, Endang Sri. 2017. Sports Physiology, textbook. Surabaya: Unesa University Press.*	0%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	54.84%
2.	Project Results Assessment / Product Assessment	25.84%
3.	Portfolio Assessment	8.33%
4.	Practice / Performance	1.67%
5.	Test	8.34%
		99.02%

Notes

1. **Learning Outcomes of Study Program Graduates (PLO - Study Program)** are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of their study program obtained through the learning process.
2. **The PLO imposed on courses** are several learning outcomes of study program graduates (CPL-Study Program) which are used for the formation/development of a course consisting of aspects of attitude, general skills, special skills and knowledge.
3. **Program Objectives (PO)** are abilities that are specifically described from the PLO assigned to a course, and are specific to the study material or learning materials for that course.
4. **Subject Sub-PO (Sub-PO)** is a capability that is specifically described from the PO that can be measured or observed and is the final ability that is planned at each learning stage, and is specific to the learning material of the course.
5. **Indicators for assessing** ability in the process and student learning outcomes are specific and measurable statements that identify the ability or performance of student learning outcomes accompanied by evidence.
6. **Assessment Criteria** are benchmarks used as a measure or measure of learning achievement in assessments based on predetermined indicators. Assessment criteria are guidelines for assessors so that assessments are consistent and unbiased. Criteria can be quantitative or qualitative.
7. **Forms of assessment:** test and non-test.
8. **Forms of learning:** Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
9. **Learning Methods:** Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
10. **Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
11. **The assessment weight** is the percentage of assessment of each sub-PO achievement whose size is proportional to the level of difficulty of achieving that sub-PO, and the total is 100%.

12. TM=Face to face, PT=Structured assignments, BM=Independent study.