	Universitas Negeri Surabaya Faculty of Sports and Health Sciences Bachelor of Sports Science Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Sports Biochemistry	8920103016		T=3	P=0	ECTS=4.77	3	July 17, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	Dr. Heri Wahyudi, S.Or., M.Pd.

Learning model	**Case Studies**
Program Learning Outcomes (PLO)	**PLO study program that is charged to the course**
	Program Objectives (PO)
	PLO-PO Matrix

	P.O

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

Short Course Description	Examining concepts, principles, laws and theories related to chemical processes in cells including their use as indicators for evaluating training/exercise progress, which includes an understanding of cells, water and electrolytes, buffer systems, enzymes, hormones, energy metabolism, metabolism. carbohydrate, fat metabolism, and protein metabolism. Learning through literature reviews, discussions and practical activities appropriate to the topic in a sports context.
References	**Main :**
	1. (1) Erman. 2007. Dasar-Dasar Biokimia Olahraga. Surabaya: Unesa University Press (2) Murray. 2003. Biokimia Harper. Jakarta: EGC (3) Linder. 2006. Biokimia Nutrisi Dan Metabolisme. Jakarta: UI Press (4) Lehninger.1982.Dasar-Dasar Biokimia. Jakarta: Erlangga (5) Ngili. 2013. Biokimia Dasar. Bandung: Rekayasa Sains
	Supporters:
Supporting lecturer	Dr. Dita Yuliastrid, S.Si., M.Kes. Anna Noordia, S.TP., M.Kes. Ratna Candra Dewi, S.KM., M.Kes. dr. Ananda Perwira Bakti, 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	Understand the properties of chemicals in living organisms.	1. Identify the meaning of biochemistry 2. Identify the scope of biochemistry 3. Explain the special nature & logical characteristics of living organisms	**Criteria:** 1. Question 1: 30 Question 2: 30 2. Question 3: 40	Lectures, discussions and presentations 3 X 50			0%
2	Understand cell theory	1. Explain the differences between prokaryotic cells & eukaryotic cells 2. Identify the parts of eukaryotic cells & their role in the cell's biochemical reactions 3. Explain the chemicals found in protoplasm	**Criteria:** Question 1: 30 Question 2: 30 Question 3: 40	Lectures, discussions and presentations 3 X 50			0%
3	Understanding Acid-Base & Buffer Systems	1. Explain the meaning of acid base 2. Explain the meaning of buffer solutions & their role in the body 3. Determine the pH of buffer solutions 4. Identify the types of buffer systems in the blood	**Criteria:** Question 1: 30 Question 2: 30 Question 3: 40	Lectures, discussions and presentations 3 X 50			0%
4	Understand the role of enzymes & properties of enzymes	1. Explain the role & properties of enzymes 2. Explain the work of enzymes 3. Explain the factors that influence the work of enzymes 4. Explain the relationship between enzymes, coenzymes, vitamins, & metal ion cofactors	**Criteria:** Question 1: 30 Question 2: 30 Question 3: 40	Lectures, discussions and presentations 3 X 50			0%
5	Understand the function of hormones in physical activity	1. Explain the mechanism of action of hormones 2. Explain the function of hormones in physical activity 3. Explain the hormone control system 4. Analyze the relationship between several hormones involved during physical exercise	**Criteria:** Question 1: 30 Question 2: 30 Question 3: 40	Lectures, discussions and presentations 3 X 50			0%
6	Understanding energy metabolism	1. Explain the difference between anabolism & catabolism 2. Explain the ATP cycle 3. Explain the first & second laws of thermodynamics 4. Explain the factors that influence energy needs	**Criteria:** Question 1: 30 Question 2: 30 Question 3: 40	Lectures, discussions and presentations 6 X 50			0%

7	Understanding energy metabolism	1. Explain the difference between anabolism & catabolism 2. Explain the ATP cycle 3. Explain the first & second laws of thermodynamics 4. Explain the factors that influence energy needs	**Criteria:** Question 1: 30 Question 2: 30 Question 3: 40	Lectures, discussions and presentations 6 X 50			0%
8	MIDTERM EXAM	-	**Criteria:** -	Essay 3 X 50			0%
9							0%
10							0%
11							0%
12							0%
13							0%
14							0%
15							0%
16							0%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
		0%

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.