



**Universitas Negeri Surabaya**  
**Faculty of Mathematics and Natural Sciences**  
**Master of Science Education Study Program**

Document Code

**SEMESTER LEARNING PLAN**

<b>Courses</b>	<b>CODE</b>	<b>Course Family</b>	<b>Credit Weight</b>			<b>SEMESTER</b>	<b>Compilation Date</b>
Biological Science Study 1	8410102203		T=2	P=0	ECTS=4.48	2	July 18, 2024
<b>AUTHORIZATION</b>	<b>SP Developer</b>		<b>Course Cluster Coordinator</b>			<b>Study Program Coordinator</b>	
	.....		.....			Dr. Eko Hariyono, S.Pd., M.Pd.	
<b>Learning model</b>	Case Studies						
<b>Program Learning Outcomes (PLO)</b>	PLO study program that is charged to the course						
	Program Objectives (PO)						
	PLO-PO Matrix						
		P.O					
<b>Short Course Description</b>	This course examines concepts and their applications in everyday life to solve problems related to cell structure and function and their relationship in everyday life, including organelles and cell components. Learning is delivered through presentations, discussions and questions and answers based on the results of a literature review.						
<b>References</b>	<b>Main :</b>						
	1. Mc. Lennan A. Andy Bates. Phil Turner. Mike White. 2012. Moleculer Biology ed 3. New York: Taylor n Francis. 2. Subowo. 2015. Biologi Sel ed. 7. Indonesia Tropp B.E. 2012. Moleculer Biology. New York: Quen College City Univ. 3. Yuwono T. 2015. Biologi Molekular . Jakarta: Penerbit Airlangga.						
	<b>Supporters:</b>						
<b>Supporting lecturer</b>	TJANDRAKIRANA Dr. H. Sunu Kuntjoro, S.Si., M.Si.						
Week-	Final abilities of each learning stage (Sub-PO)	Evaluation		Help Learning, Learning methods, Student Assignments, [ Estimated time]		Learning materials [ References ]	Assesment Weight (%)
		Indicator	Criteria & Form	Offline ( offline )	Online ( online )		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

1	Communicate understanding of several types of cells and their roles in life	a. Describe the concept of cells and their role in life b. Identify plant cell types c. Identify animal/human cell types		Assignments, Presentations, Discussions, Reviews 3 X 50			0%
2	Understand the concept of structure and function of cell walls, cell membranes, cytoplasm	a. Describe the concepts of cell structure and function, cell membrane and cytoplasm b. Compare the structure and function of the cell wall, cell membrane and cytoplasm c. Developing the concept of transport that occurs in cell walls, cell membranes, and its relationship in cell biological processes and solving life problems responsibly		Assignments, Presentations, Discussions, Reviews 3 X 50			0%
3	Understand the concept of structure and function of the nucleus and nucleolus and the process of protein synthesis by utilizing IT as a supporting medium	a. Describe the concept of structure and function of the nucleus and nucleolus b. Describe the mechanism of protein synthesis using IT as a supporting medium		Assignments, Presentations, Discussions, Reviews 3 X 50			0%
4	Understand the concept of structure and function of the Golgi apparatus and the process of protein formation according to the needs of other cell organelles by utilizing IT as a supporting medium	a. Describe the concept of structure and function of the Golgi Apparatus b. Describe the mechanism of protein formation according to needs using IT as a supporting medium		Assignments, Presentations, Discussions, Reviews 3 X 50			0%
5	Understand the concept of mitochondrial structure and function and the ATP formation process by utilizing IT as a supporting medium	a. Describe the concept of mitochondrial structure and function b. Describe the mechanism of ATP formation using IT as a supporting medium		Assignments, Presentations, Discussions, Reviews 3 X 50			0%
6	Understand the concept of structure and function of Lysosomes, Vacuoles, Chloroplasts and the process of carbohydrate formation by utilizing IT as a supporting medium	a. Describe the concept of structure and function of lysosomes, vacuoles and chloroplasts b. Describe the mechanism of carbohydrate formation using IT as a supporting medium		Assignments, Presentations, Discussions, Reviews 3 X 50			0%

7	Understand the concept of structure and function of Ribosomes, Peroxisomes, Glyoxisomes and the process of protein formation in accordance with the needs of other cell organelles by utilizing IT as a supporting medium	a. Describe the concept of structure and function of Ribosomes, Peroxisomes, Glyoxisomes b. Describe the mechanism of protein formation according to needs using IT as a supporting medium		Assignments, Presentations, Discussions, Reviews 3 X 50			0%
8	UTS material for meetings 1 to 7			3 X 50			0%
9	Understand the concept of structure and function of the rough and smooth Endoplasmic Reticulum as well as the processes within it by utilizing IT as a supporting medium	a. Describe the concept of structure and function of the rough and smooth Endoplasmic Reticulum b. Describe the processes that occur in the rough and smooth Endoplasmic Reticulum using IT as a supporting medium		Assignments, Presentations, Discussions, Reviews 3 X 50			0%
10	Understand the concept of Cytoskeleton structure and function, Cell Movement (Actin and Myosin) by utilizing IT as a supporting medium	a. Describe the concept of cytoskeleton structure and function b. Describe cell movement (actin and myosin) using IT as a supporting medium		Assignments, Presentations, Discussions, Reviews 3 X 50			0%
11	Understand the concept of cell abnormalities	Distinguish between the structure and function of Normal and Abnormal Cells		Assignments, Presentations, Discussions, Reviews 3 X 50			0%
12	Understand the concept of the immune system	a. Describe the meaning of the immune system b. Identify the various types of immune systems c. Give an example of the role of the immune system in human life d. Provide examples of behaviors that support maintenance of the immune system		Assignments, Presentations, Discussions, Reviews 3 X 50			0%
13	Understand the concept of structure and function of centrioles, mitosis and meiosis	Describe the concept of structure and function of centrioles, mitosis and meiosis		Assignments, Presentations, Discussions, Reviews 3 X 50			0%
14	Understand the concept of structure and function of Gonad Cells ♂ / ♀	Describe the concept of structure and function of Gonad Cells ♂ / ♀		Assignments, Presentations, Discussions, Reviews 3 X 50			0%

15	Understand the concept of Insemination	Describe the concept of insemination		Assignments, Presentations, Discussions, Reviews 3 X 50			0%
16	UAS material for meetings 9 to 15			3 X 50			0%

**Evaluation Percentage Recap: Case Study**

No	Evaluation	Percentage
		0%

**Notes**

- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- Forms of assessment:** test and non-test.
- 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.
- 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.
- Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
- 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%.
- TM=Face to face, PT=Structured assignments, BM=Independent study.