



Universitas Negeri Surabaya
Faculty of Mathematics and Natural Sciences
Biology Education Undergraduate Study Program

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date																																
Plant tissue isolation method	8420502139		T=2	P=0	ECTS=3.18	6	July 18, 2024																																
AUTHORIZATION	SP Developer		Course Cluster Coordinator			Study Program Coordinator																																	
			Dr. Rinie Pratiwi Puspitawati, M.Si.																																	
Learning model	Project Based Learning																																						
Program Learning Outcomes (PLO)	PLO study program which is charged to the course																																						
	Program Objectives (PO)																																						
	PLO-PO Matrix																																						
		P.O																																					
Short Course Description	In this course, students will study the concepts and working principles related to plant tissue culture and animal tissue culture and carry out various practices to implement the concepts related to tissue culture that they have learned and will be able to develop skills in carrying out tissue culture work in vitro.																																						
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="2" style="width: 5%; text-align: center;">P.O</td> <td colspan="16" style="text-align: center;">Week</td> </tr> <tr> <td style="width: 3%;">1</td> <td style="width: 3%;">2</td> <td style="width: 3%;">3</td> <td style="width: 3%;">4</td> <td style="width: 3%;">5</td> <td style="width: 3%;">6</td> <td style="width: 3%;">7</td> <td style="width: 3%;">8</td> <td style="width: 3%;">9</td> <td style="width: 3%;">10</td> <td style="width: 3%;">11</td> <td style="width: 3%;">12</td> <td style="width: 3%;">13</td> <td style="width: 3%;">14</td> <td style="width: 3%;">15</td> <td style="width: 3%;">16</td> </tr> </table>							P.O	Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
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Supporting lecturer	Dra. Evie Ratnasari, M.Si. Dr. Nur Duchu, S.Si., M.Si. Sari Kusuma Dewi, 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]	Assessment Weight (%)																																
		Indicator	Criteria & Form	Offline (offline)	Online (online)																																		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)																																

1	Students can 1. Describe and apply the concept of plant tissue culture. 2. Know the function of the equipment in the Tissue Culture lab and be able to use it and understand how to care for it.	After attending the lecture, students are expected to be able to: 1. explain the concept of plant tissue culture, its scope and the relationship between kjt and other sciences.2. Can use and maintain equipment in the Tissue Culture laboratory.	Criteria: 1. Practical papers and reports, including practical value 302. Activeness in discussions and presentations, including participation value 203. UTS questions are material from the 1st to 7th meeting, UTS value is 204. UAS questions are material from the 9th to 7th meeting. 16, UAS score 30	Presentation, discussion 3 X 50			0%
2	Students can: 1. Get to know the tools and materials for making KJT media. 2. Calculate the chemicals needed to make MS3 media stock. Make stock solutions for MS4 media. Know the process of making simple KJT media and MS media	After attending the lecture, students are expected to be able to: 1. Get to know the tools and materials for making simple KJT media and MS2 media. Calculate the chemicals needed to make MS3 media stock. Making stock solutions for MS media 4. Knowing the process of making simple KJT media 5. Knowing the process of making MS media	Criteria: 1. Practical papers and reports, including practical value 302. Activeness in discussions and presentations, including participation value 203. UTS questions are material from the 1st to 7th meeting, UTS value is 204. UAS questions are material from the 9th to 7th meeting. 16, UAS score 30	1. Presentation, discussion and reflection 2. Practical work on making MS media stock solutions, making simple KJT media and MS media. 3. Making a 3 X 50 practical report			0%
3	Students can 1. Identify factors that influence plant material 2. Understand the process of explant isolation, sterilization and inoculation	After attending the lecture, students are expected to be able to: 1. Identify the factors that influence plant material/explants 2. Understand the procedures for implementing isolation, sterilization and inoculation of explants.	Criteria: 1. Practical papers and reports, including practical value 302. Activeness in discussions and presentations, including participation value 203. UTS questions are material from the 1st to 7th meeting, UTS value is 204. UAS questions are material from the 9th to 7th meeting. 16, UAS score 30	1. Presentation, discussion and reflection 2. Practical isolation, sterilization and inoculation of explants 3. Making a 3 X 50 practical report			0%
4	Students can 1. Carry out the sub-culture process 2. Identify factors that influence the growth and development of plant tissue culture.	After attending the lecture, students are expected to be able to: 1. Understand sub-culture process procedures. 2. Be able to identify factors that influence the growth and development of plant tissue culture.	Criteria: 1. Practical papers and reports, including practical value 302. Activeness in discussions and presentations, including participation value 203. UTS questions are material from the 1st to 7th meeting, UTS value is 204. UAS questions are material from the 9th to 7th meeting. 16, UAS score 30	1. Presentation, discussion and reflection 2. Sub-cultural practicum 3. Making a 3 X 50 practical report			0%
5	Students can 1. Identify factors that influence the transfer of plants from in vitro to in vivo 2. Students can: Apply techniques for making protocorm like bodies	After attending the lecture, students are expected to: 1. Be able to identify factors that influence the transfer of plants from in vitro to in vivo 2. After attending the lecture, students are expected to be able to apply the technique of making protocorm like bodies	Criteria: 1. Practical papers and reports, including practical value 302. Activeness in discussions and presentations, including participation value 203. UTS questions are material from the 1st to 7th meeting, UTS value is 204. UAS questions are material from the 9th to 7th meeting. 16, UAS score 30	1. Presentation and discussion 2. Making papers 3. Practical work on making protocorm like bodies 3. Making a 3 X 50 practical report			0%

6	Students can apply basic embryo culture techniques	After attending the lecture, students are expected to 1. understand the basic techniques of embryo culture. 2. be able to carry out embryo culture practicum according to the correct procedures	Criteria: 1. Practical papers and reports, including practical value 302. Activeness in discussions and presentations, including participation value 203. UTS questions are material from the 1st to 7th meeting, UTS value is 204. UAS questions are material from the 9th to 7th meeting. 16, UAS score 30	1. Presentation, discussion, 2. Practicum on embryo culture 3. Preparation of practical report 3 X 50			0%
7	Students can apply the principles of orchid culture	After attending the lecture, students are expected to 1. understand the principles of orchid culture for orchid cultivation 2. be able to carry out orchid culture practicum according to the correct procedures	Criteria: 1.1. Practical papers and reports, including 30 practical marks 2.2. Activeness in discussions and presentations, including a participation score of 20 3.3. UTS questions are material from the 1st to 7th meeting, UTS value is 20 4.4. UAS questions are material from the 9th to 16th meeting, UAS score is 30	1. Presentation, discussion, 2. Practicum on orchid culture 3. Make a practical report 3 X 50			0%
8	The final ability of the 1st to 7th encounters	indicators for the 1st to 7th meetings	Criteria: 1.1. Practical papers and reports, including practical value 30 2. Activeness in discussions and presentations, including participation value 20 2.3. UTS questions are material from the 1st to 7th meeting, UTS value is 20 3.4. UAS questions are material from the 9th to 16th meeting, UAS score is 30	2 X 50			0%
9	Students can 1. describe the history, development and examples of the benefits of animal tissue culture in everyday life. 2. Explain and relate the benefits of animal tissue culture to human life	After attending the lecture, students are expected to 1. be able to describe the history, development and examples of the benefits of animal tissue culture in everyday life. 2. be able to explain, relate the benefits and carry out animal tissue culture techniques for human life.	Criteria: 1. Practical papers and reports, including practical value 302. Activeness in discussions and presentations, including participation value 203. UTS questions are material from the 1st to 7th meeting, UTS value is 204. UAS questions are material from the 9th to 7th meeting. 16, UAS score 30	Presentation and discussion 3 X 50			0%

10	Students can 1. differentiate between plant tissue culture and animal tissue culture. 2. Describe and apply KJH procedures.	After attending the lecture, students are expected to 1. understand the differences in principles that exist between KJT and KJH2. can describe and apply KJH procedures correctly	Criteria: 1. Practical papers and reports, including practical value 302. Activeness in discussions and presentations, including participation value 203. UTS questions are material from the 1st to 7th meeting, UTS value is 204. UAS questions are material from the 9th to 7th meeting. 16, UAS score 30	Presentation and discussion 3 X 50			0%
11	Students can 1. Describe and create a suitable chemical environment for KJH. 2. Describe and create a suitable physical environment for KJH	After attending the lecture, students are expected to be able to 1. Communicate chemical factors that are suitable for KJH 2. Communicate physical factors that are suitable for KJH	Criteria: 1. Practical papers and reports, including practical value 302. Activeness in discussions and presentations, including participation value 203. UTS questions are material from the 1st to 7th meeting, UTS value is 204. UAS questions are material from the 9th to 7th meeting. 16, UAS score 30	Presentations, discussions, writing papers 3 X 50			0%
12	Students can explain and apply techniques in vertebrate tissue culture	After attending the lecture, students are expected to be able to 1. Explain the techniques in vertebrate KJH 2. Apply the techniques in vertebrate KJH	Criteria: 1. Practical papers and reports, including practical value 302. Activeness in discussions and presentations, including participation value 203. UTS questions are material from the 1st to 7th meeting, UTS value is 204. UAS questions are material from the 9th to 7th meeting. 16, UAS score 30	1. Presentation and discussion 2. Make a 3 X 50 paper			0%
13	Students can explain and apply procedures for making KJH media and primary cell culture	After attending the lecture, students are expected to be able to: 1. Carry out the manufacture of KJH media 2. Culture primary cells in vitro.	Criteria: 1. Practical papers and reports, including practical value 302. Activeness in discussions and presentations, including participation value 203. UTS questions are material from the 1st to 7th meeting, UTS value is 204. UAS questions are material from the 9th to 7th meeting. 16, UAS score 30	1. Presentation, discussion, reflection 2. Creating KJh media 3. Practical work on making primary cell cultures of chicken embryos 4. Make a 3 X 50 practical report			0%
14	Students can explain and apply in vitro vertebrate tissue sub-culture procedures	After attending the lecture, students are expected to be able to carry out sub-cultures of vertebrate tissue in vitro	Criteria: 1. Practical papers and reports, including practical value 302. Activeness in discussions and presentations, including participation value 203. UTS questions are material from the 1st to 7th meeting, UTS value is 204. UAS questions are material from the 9th to 7th meeting. 16, UAS score 30	1. Presentation, discussion, reflection 2. In vitro vertebrate tissue subculture practicum 3. Make a 3 X 50 practicum report			0%

15	Students can observe primary cell cultures of chicken embryos	After attending the lecture, students are expected to be able to: 1. Understand the procedures for making tissue, organ and embryo cultures 2. Understand cell morphology in culture 3. Understand cell chromosomes in culture 4. Understand cell changes and transformations	Criteria: 1. Practical papers and reports, including practical value 302. Activeness in discussions and presentations, including participation value 203. UTS questions are material from the 1st to 7th meeting, UTS value is 204. UAS questions are material from the 9th to 7th meeting. 16, UAS score 30	1. Presentation, discussion, reflection 2. Observation of primary cell culture of chicken embryos 3. Make a 3 X 50 practical report			0%
16							0%

Evaluation Percentage Recap: Project Based Learning

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.