	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
INSTRUMENT DEVELOPMENT	8420502269	Study Program Elective Courses	T=2	P=0	ECTS=3.18	6	January 15, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
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Learning model	**Project Based Learning**	
Program Learning Outcomes (PLO)	**PLO study program that is charged to the course**	
	PLO-8	Able to make decisions based on data/information in order to complete tasks as part of his responsibilities in the work he has done
	PLO-9	Able to design, implement and evaluate biology learning by utilizing ICT
	Program Objectives (PO)	
	PO - 1	Students can explain variables and research data
	PO - 2	Students can determine data collection methods according to research objectives
	PO - 3	Students can evaluate appropriate research instruments for data collection
	PO - 4	Students can explain the validity and reliability of the instrument
	PO - 5	Students can develop research instruments according to research objectives
	PO - 6	Students can analyze the validity and reliability of instruments using a computer
	PO - 7	Students can analyze validity using the Aiken and Lawshe formula
	PLO-PO Matrix	

P.O	PLO-8	PLO-9
PO-1		
PO-2		
PO-3		
PO-4		
PO-5		
PO-6		
PO-7		

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																
PO-5																
PO-6																
PO-7																

Short Course Description	This course examines various research data collection instruments including data, measurement scales, data collection instruments, instrument development, determining validity and reliability, analysis methods and interpretation of data analysis results. This course is presented in theory and in instrument development workshops.
References	**Main :**

1. Arends, Richard I. 2004. Guide to Field Experiences and Portofolio Development: to accompany learning to teach . New York: McGrawHill Company
2. David W. Johnson dan Roger T Johnson. 2002. Meaningful Assessment. Boston: Allyn and Bacon
3. Reed JS. Arthe and Verna E Bergemann. 2001. A Guide to Observation, Partiv=cipation, and Reflection in The Classroom . New York: McGraw Hill Company
4. Chism, Van Note, Nancy. 2007. Peer Review of teaching . Bolton: Anker Publishing Company., Inc.
5. Widoyoko, Eko Putro. 2013. Teknik Penyusunan Instrumen Penelitian . Yogyakarta: Pustaka Pelajar.

Supporters:	
Supporting lecturer	MUSLIMIN IBRAHIM Prof. Dr. Endang Susantini, M.Pd. Dr. Ulfi Faizah, S.Pd., M.Si. Dr. Muji Sri Prastiwi, S.Pd., M.Pd. Dr. Pramita Yakub, S.Pd., M.Pd.

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	1. Students can explain variables and research data 2. Explain the characteristics of variables 3. Explain the various variables. Explain the forms of relationships between variables 4. Explain the meaning of research data 5. Explain the various types of research data	1. Explain the meaning of variables 2. Explain the characteristics of variables 3. Explain the types of variables 4. Explain the forms of relationships between variables 5. Explain the meaning of research data 6. Explain the types of research data 7. Explain the sources of research data	**Form of Assessment** : Participatory Activities	Online presentations, questions and answers, and discussions	2x50 online presentations, questions and answers, and discussions	**Material:** Research Variables (understanding, characteristics, types and forms of relationships between variables) Research Data (Understanding, types, data sources) **References:** *Widoyoko, Eko Putro. 2013. Techniques for Preparing Research Instruments. Yogyakarta: Student Library.*	0%

2	1. Students can explain variables and research data 2. Explain the characteristics of variables 3. Explain the various variables. Explain the forms of relationships between variables 4. Explain the meaning of research data 5. Explain the various types of research data	1. Explain the meaning of variables 2. Explain the characteristics of variables 3. Explain the types of variables 4. Explain the forms of relationships between variables 5. Explain the meaning of research data 6. Explain the types of research data 7. Explain the sources of research data	**Form of Assessment** : Participatory Activities	Online presentations, questions and answers, and discussions	2x50 online presentations, questions and answers, and discussions	**Material:** Research Variables (understanding, characteristics, types and forms of relationships between variables) Research Data (Understanding, types, data sources) **References:** *Widoyoko, Eko Putro. 2013. Techniques for Preparing Research Instruments. Yogyakarta: Student Library.*	5%
3	1. Explain data collection methods 2. Explain data collection instruments 3. Explain the relationship between data collection methods and instruments 4. Explain the procurement of Instruments	1. Explain data collection methods 2. Explain data collection instruments 3. Explain the relationship between data collection methods and instruments 4. Explain procurement of instruments	**Form of Assessment** : Participatory Activities	Online presentations, questions and answers, and discussions	2 X 50 online presentations, questions and answers, and discussions	**Material:** Research Data Collection (Methods, Instruments, methods and instruments, procurement of instruments) **References:** *Widoyoko, Eko Putro. 2013. Techniques for Preparing Research Instruments. Yogyakarta: Student Library.*	5%
4	1. explain the characteristics of objective test instruments 2. explain the characteristics of subjective test instruments 3. Explains the steps of test development 4. Explain the characteristics of non-test instruments 5. Explain the steps for compiling a non-test instrument 6. Explains theory as a guide for preparing non-test instruments	1. explain the characteristics of objective test instruments 2. explain the characteristics of subjective test instruments 3. explain the steps in developing tests 4. explain the characteristics of non-test instruments 5. explain the steps for preparing non-test instruments 6. explain theory as a guide for preparing non-test instruments	**Form of Assessment** : Participatory Activities	4 X 50 offline presentations, questions and answers, and discussions		**Material:** Various Research Instruments and Their Characteristics (test instruments and non-test instruments) **References:** *Widoyoko, Eko Putro. 2013. Techniques for Preparing Research Instruments. Yogyakarta: Student Library.*	0%

5	1. explain the characteristics of objective test instruments 2. explain the characteristics of subjective test instruments 3. Explains the steps of test development 4. Explain the characteristics of non-test instruments 5. Explain the steps for compiling a non-test instrument 6. Explains theory as a guide for preparing non-test instruments	1. explain the characteristics of objective test instruments 2. explain the characteristics of subjective test instruments 3. explain the steps in developing tests 4. explain the characteristics of non-test instruments 5. explain the steps for preparing non-test instruments 6. explain theory as a guide for preparing non-test instruments	**Form of Assessment** : Participatory Activities	4 X 50 offline presentations, questions and answers, and discussions		**Material:** Various Research Instruments and Their Characteristics (test instruments and non-test instruments) **References:** *Widoyoko, Eko Putro. 2013. Techniques for Preparing Research Instruments. Yogyakarta: Student Library.*	5%
6	1. Explain the validity of the instrument 2. Explain the types and functions of instrument reliability 3. Skilled in determining the reliability of a data collection instrument 4. Skilled in developing research instruments based on solo taxonomy	1. Explain the validity of the instrument. 2. Explain the reliability of the instrument		4 X 50 offline presentations, questions and answers, and discussions		**Material:** Validity and reliability of instruments **References:** *Widoyoko, Eko Putro. 2013. Techniques for Preparing Research Instruments. Yogyakarta: Student Library.*	10%
7	1. Explain the validity of the instrument 2. Explain the types and functions of instrument reliability 3. Skilled in determining the reliability of a data collection instrument 4. Skilled in developing research instruments based on solo taxonomy	1. Explain the validity of the instrument. 2. Explain the reliability of the instrument	**Form of Assessment** : Participatory Activities	4 X 50 offline presentations, questions and answers, and discussions		**Material:** Validity and reliability of instruments **References:** *Widoyoko, Eko Putro. 2013. Techniques for Preparing Research Instruments. Yogyakarta: Student Library.*	10%
8	UTS		**Form of Assessment** : Test	2 X 50			20%

9	1. Develop research instruments in the form of tests 2. Develop research instruments to measure performance 3. Skilled in developing scoring rubrics 4. Develop research instruments to make observations 5. Developing research instruments for conducting interviews	1. Develop research instruments in the form of tests 2. Develop research instruments to measure performance 3. Develop research instruments to conduct observations 4. Develop research instruments to conduct interviews	**Form of Assessment** : Project Results Assessment / Product Assessment	2 X 50 offline presentations, questions and answers, and discussions		**Material:** Development of research instruments (tests, performance, observations, interviews) **References:** *Widoyoko, Eko Putro. 2013. Techniques for Preparing Research Instruments. Yogyakarta: Student Library.*	5%
10	1. Develop research instruments to measure performance 2. Skilled in developing scoring rubrics 3. Develop research instruments to make observations 4. Developing research instruments for conducting interviews	1. Develop research instruments in the form of tests 2. Develop research instruments to measure performance 3. Develop research instruments to conduct observations 4. Develop research instruments to conduct interviews	**Form of Assessment** : Project Results Assessment / Product Assessment	2 X 50 offline presentations, questions and answers, and discussions		**Material:** Development of research instruments (tests, performance, observations, interviews) **References:** *Widoyoko, Eko Putro. 2013. Techniques for Preparing Research Instruments. Yogyakarta: Student Library.*	10%
11	1. Skilled in developing scoring rubrics 2. Develop research instruments to make observations 3. Developing research instruments for conducting interviews	1. Develop research instruments in the form of tests 2. Develop research instruments to measure performance 3. Develop research instruments to conduct observations 4. Develop research instruments to conduct interviews	**Form of Assessment** : Project Results Assessment / Product Assessment	2 X 50 offline presentations, questions and answers, and discussions		**Material:** Development of research instruments (tests, performance, observations, interviews) **References:** *Widoyoko, Eko Putro. 2013. Techniques for Preparing Research Instruments. Yogyakarta: Student Library.*	10%
12	1. Develop research instruments to make observations 2. Developing research instruments for conducting interviews	1. Develop research instruments in the form of tests 2. Develop research instruments to measure performance 3. Develop research instruments to conduct observations 4. Develop research instruments to conduct interviews	**Form of Assessment** : Project Results Assessment / Product Assessment	2 X 50 offline presentations, questions and answers, and discussions		**Material:** Development of research instruments (tests, performance, observations, interviews) **References:** *Widoyoko, Eko Putro. 2013. Techniques for Preparing Research Instruments. Yogyakarta: Student Library.*	10%

13	1. Analyzing the internal validity of a research instrument using SPSS 2. Analyzing the external validity of a research instrument using SPSS 3. Analyzing the reliability of a research instrument using SPSS	1. Analyzing the internal validity of a research instrument using SPSS 2. Analyzing the external validity of a research instrument using SPSS 3. Analyzing the reliability of a research instrument using SPSS		2 X 50 offline presentations, questions and answers, and discussions		**Material:** Analysis of the validity and reliability of instruments using a computer (internal validity, external validity) **References:** *Widoyoko, Eko Putro. 2013. Techniques for Preparing Research Instruments. Yogyakarta: Student Library.*	10%
14	1. Analyzing the internal validity of a research instrument using SPSS 2. Analyzing the external validity of a research instrument using SPSS 3. Analyzing the reliability of a research instrument using SPSS	1. Analyzing the internal validity of a research instrument using SPSS 2. Analyzing the external validity of a research instrument using SPSS 3. Analyzing the reliability of a research instrument using SPSS	**Form of Assessment** : Project Results Assessment / Product Assessment	2 X 50 offline presentations, questions and answers, and discussions		**Material:** Analysis of the validity and reliability of instruments using a computer (internal validity, external validity) **References:** *Widoyoko, Eko Putro. 2013. Techniques for Preparing Research Instruments. Yogyakarta: Student Library.*	10%
15	1. Analyzing validity with the Aiken formula 2. Analyzing validity with Lawshe's formula		**Form of Assessment** : Project Results Assessment / Product Assessment	Presentations, questions and answers, and discussions 2 X 50		**Material:** Validity of Aiken and Lawshe **Reference:** *Widoyoko, Eko Putro. 2013. Techniques for Preparing Research Instruments. Yogyakarta: Student Library.*	10%
16	UAS					**Material:** Development of Educational Research Instruments **Library:** *Widoyoko, Eko Putro. 2013. Techniques for Preparing Research Instruments. Yogyakarta: Student Library.*	5%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	25%
2.	Project Results Assessment / Product Assessment	55%
3.	Test	20%
		100%

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.