	Universitas Negeri Surabaya Faculty of Mathematics and Natural Sciences Bachelor of Science Education Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Science Basics	8420102028		T=2	P=0	ECTS=3.18	1	July 18, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	Prof. Dr. Erman, M.Pd.

Learning model	**Case Studies**	
Program Learning Outcomes (PLO)	**PLO study program that is charged to the course**	
	PLO-5	Demonstrate scientific, critical, and innovative attitudes in integrated science learning, laboratory activities, and professional-related tasks
	PLO-7	Communicate ideas and research results effectively both in oral and written form
	PLO-11	Design and conduct research about learning of integrated science, and acquire, analyze, and interpret the research data
	PLO-13	Demonstrate knowledge of integrated science (physics, chemistry, and biology)
	Program Objectives (PO)	
	PO - 1	Utilizing science and technology as a tool for developing science
	PO - 2	Mastering the nature and scope of science, science as inquiry, KPS, analysis of aspects of science content, thinking skills and literacy
	PO - 3	Skilled in carrying out scientific inquiry activities with the content and context of the SMP/MTs curriculum
	PO - 4	Developing student attitudes that are responsible, open to criticism, cooperative and care about time
	PLO-PO Matrix	

P.O	PLO-5	PLO-7	PLO-11	PLO-13
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 discusses the nature and scope of science, science as inquiry, science process skills (KPS), aspects of science content, the function of science in developing thinking skills and scientific literacy. Lectures are conducted using discussion, discovery learning and project methods.	
References	**Main :**	

1. Kemdikbud. 2008. BSE IPA SMP CTL. Jakarta: Kemdikbud.
2. Kemdikbud. 2016. BS IPA SMP K13. Jakarta: Kemdikbud.
3. NRC. 2012. National Science Education Standards. Washington: NAP.
4. Rutherford, F.J. & Ahlgreb, A. 1990. Science for All American. New York: Oxford University Press.
5. Suryanti, Mintohari, Widodo, W. 2004. Pengembangan Pembelajaran IPA. Surabaya: Unesa University Press.
6. Tim MIPA Unesa. 2007. Sains Dasar. Surabaya: Unesa University Press.

Supporters:	

Supporting lecturer	Dra. Martini, M.Pd. Dr. Elok Sudibyo, S.Pd.,M.Pd. Ahmad Qosyim, S.Si., M.Pd. Muhamad Arif Mahdiannur, 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	Describe the nature and scope of IPA	1. Explain the nature of IPA 2. Explain the scope of IPA	**Criteria:** 1. 4: correct description 2. 3: the description is generally correct, there is one aspect where the explanation is incorrect 3. 2: the description is generally correct, there is more than one aspect where the explanation is incorrect 4. 1: the description is wrong **Form of Assessment** : Participatory Activities	Cased-based Learning (CBL), Presentation and Discussion 2 X 50	Case based learning through peer-interaction (Synchronous) via Zoom/Google Meet and Asynchronous via LMS Si Dia UNESA 2x50	**Material:** Nature and scope of natural sciences **Library:** *NRC. 2012. National Science Education Standards. Washington: NAP.* **Material:** The nature and scope of science **Reference:** *Rutherford, FJ & Ahlgreb, A. 1990. Science for All Americans. New York: Oxford University Press.*	5%

2	Carrying out simple inquiries in science	Make observations, inferences, and communicate the results	**Criteria:** 1. Test with criteria: True and False 2. Assignment product: according to the rubric. Grade A if the observation results are described accurately according to observations, the resulting inference is logical and based on observations, presentation in different representations is carried out (eg tables, graphs, charts, etc.). Any reduction in product quality results in a reduction in value. **Form of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	guided inquiry 2 X 50	Case based learning through peer-interaction (Synchronous) via Zoom/Google Meet and Asynchronous via LMS Si Dia UNESA 2x50	**Material:** Inquiry in Science **Library:** *Ministry of Education and Culture. 2008. BSE Science Middle School CTL. Jakarta: Ministry of Education and Culture.* **Material:** Inquiry in Science **Library:** *Ministry of Education and Culture. 2016. BS K13 Middle School Science. Jakarta: Ministry of Education and Culture.* **Material:** Inquiry in Science **Reference:** *Suryanti, Mintohari, Widodo, W. 2004. Development of Science Learning. Surabaya: Unesa University Press.*	5%
3	Carrying out simple inquiries in science	Make observations, inferences, and communicate the results	**Criteria:** 1. Test with criteria: True and False 2. Assignment product: according to the rubric. Grade A if the observation results are described accurately according to observations, the resulting inference is logical and based on observations, presentation in different representations is carried out (eg tables, graphs, charts, etc.). Any reduction in product quality results in a reduction in value. **Form of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	guided inquiry 2 X 50	Case based learning through peer-interaction (Synchronous) via Zoom/Google Meet and Asynchronous via LMS Si Dia UNESA 2x50	**Material:** Inquiry in Science **Library:** *Ministry of Education and Culture. 2008. BSE Science Middle School CTL. Jakarta: Ministry of Education and Culture.* **Material:** Inquiry in Science **Library:** *Ministry of Education and Culture. 2016. BS K13 Middle School Science. Jakarta: Ministry of Education and Culture.* **Material:** Inquiry in Science **Reference:** *Suryanti, Mintohari, Widodo, W. 2004. Development of Science Learning. Surabaya: Unesa University Press.*	6%

4	Mastering the components of KPS as an embodiment of inquiry in science	Formulating problems, hypotheses, controlling variables, analyzing data, and concluding	**Criteria:** Same as meeting 3 **Form of Assessment** : Participatory Activities	Cased-based Learning (CBL), KPS 2 X 50	Case based learning through peer-interaction (Synchronous) via Zoom/Google Meet and Asynchronous via LMS Si Dia UNESA 2x50	**Material:** KPS **Library:** *Suryanti, Mintohari, Widodo, W. 2004. Development of Science Learning. Surabaya: Unesa University Press.*	8%
5	Recognize physical settings and create simple mathematical modeling in natural science	Observing physical systems, taking measurements, creating simple mathematical models	**Criteria:** A: if everything is done and there is a product that meets the criteria. **Form of Assessment** : Participatory Activities	Guided inquiry 2 X 50	Case based learning through peer-interaction (Synchronous) via Zoom/Google Meet and Asynchronous via LMS Si Dia UNESA 2x50	**Material:** Physical setting **References:** *Rutherford, FJ & Ahlgreb, A. 1990. Science for All Americans. New York: Oxford University Press.*	5%
6	Recognize physical settings and create simple mathematical modeling in natural science	Observing physical systems, taking measurements, creating simple mathematical models	**Criteria:** A: if everything is done and there is a product that meets the criteria. **Form of Assessment** : Participatory Activities, Portfolio Assessment	Guided inquiry 2 X 50	Case based learning through peer-interaction (Synchronous) via Zoom/Google Meet and Asynchronous via LMS Si Dia UNESA 2x50	**Material:** Physical setting **References:** *Rutherford, FJ & Ahlgreb, A. 1990. Science for All Americans. New York: Oxford University Press.*	5%
7	Recognize the world of life, living places and their interactions, as well as how to investigate them	Describe the characteristics of life, diversity of life, interdependence, flow of matter and energy, and evolution	**Criteria:** 1.4: correct description 2.3: the description is generally correct, there is one aspect where the explanation is incorrect 3.2: the description is generally correct, there is more than one aspect where the explanation is incorrect 4.1: the description is wrong **Form of Assessment** : Participatory Activities, Portfolio Assessment	Cased-based Learning (CBL), 2 X 50 Discussions	Case based learning through peer-interaction (Synchronous) via Zoom/Google Meet and Asynchronous via LMS Si Dia UNESA 2 x 50	**Material:** Living world **Bibliography:** *Rutherford, FJ & Ahlgreb, A. 1990. Science for All Americans. New York: Oxford University Press.*	5%
8	UTS	UTS	**Criteria:** 1.4: correct description 2.3: the description is generally correct, there is one aspect where the explanation is incorrect 3.2: the description is generally correct, there is more than one aspect where the explanation is incorrect 4.1: the description is wrong **Form of Assessment** : Test	UTS 2 X 50			10%

9	Recognize the material world and its changes and how to investigate them	Explains the concept of material particles, changes in matter, and the energy that accompanies them	**Criteria:** 1.4: correct description 2.3: the description is generally correct, there is one aspect where the explanation is incorrect 3.2: the description is generally correct, there is more than one aspect where the explanation is incorrect 4.1: wrong description **Form of Assessment** : Participatory Activities, Portfolio Assessment	Discovery, Presentation and Discussion 4 X 50	Case based learning through peer-interaction (Synchronous) via Zoom/Google Meet and Asynchronous via LMS Si Dia UNESA 2 x 50	**Matter:** Matter particles, matter changes, reactions **References:** *Rutherford, FJ & Ahlgreb, A. 1990. Science for All Americans. New York: Oxford University Press.*	5%
10	Recognize the material world and its changes and how to investigate them	Explains the concept of material particles, changes in matter, and the energy that accompanies them	**Criteria:** 1.4: correct description 2.3: the description is generally correct, there is one aspect where the explanation is incorrect 3.2: the description is generally correct, there is more than one aspect where the explanation is incorrect 4.1: wrong description **Form of Assessment** : Participatory Activities, Portfolio Assessment	Discovery, Presentation and Discussion 2 X 50	Case based learning through peer-interaction (Synchronous) via Zoom/Google Meet and Asynchronous via LMS Si Dia UNESA 2 x 50	**Matter:** Matter particles, matter changes, reactions **References:** *Rutherford, FJ & Ahlgreb, A. 1990. Science for All Americans. New York: Oxford University Press.*	10%
11	Explain the values of science	Provide examples of science values that are useful in life	**Criteria:** 1.4: correct description 2.3: the description is generally correct, there is one aspect where the explanation is incorrect 3.2: the description is generally correct, there is more than one aspect where the explanation is incorrect 4.1: wrong description **Form of Assessment** : Portfolio Assessment	Cased-based Learning (CBL), 2 X 50 Discussions	Case based learning through peer-interaction (Synchronous) via Zoom/Google Meet and Asynchronous via LMS Si Dia UNESA 2 x 50	**Material:** Science Values **Library:** *NRC. 2012. National Science Education Standards. Washington: NAP.* **Material:** Science Values **References:** *Rutherford, FJ & Ahlgreb, A. 1990. Science for All Americans. New York: Oxford University Press.* **Material:** Science Values **Reference:** *Suryanti, Mintohari, Widodo, W. 2004. Development of Science Learning. Surabaya: Unesa University Press.*	5%

12	Describe thinking skills in science and their development	Explains the dimensions of cognitive processes and knowledge, and higher order thinking skills	**Criteria:** 1.4: correct description 2.3: the description is generally correct, there is one aspect where the explanation is incorrect 3.2: the description is generally correct, there is more than one aspect where the explanation is incorrect 4.1: the description is wrong **Form of Assessment** : Participatory Activities	Cased-based Learning (CBL), Practice, Presentation and Discussion 2 X 50	Case based learning through peer-interaction (Synchronous) via Zoom/Google Meet and Asynchronous via LMS Si Dia UNESA 2 x 50	**Material:** Thinking Skills in Science **Library:** *NRC. 2012. National Science Education Standards. Washington: NAP.* **Material:** Thinking skills in science **Reference:** *Rutherford, FJ & Ahlgreb, A. 1990. Science for All Americans. New York: Oxford University Press.* **Material:** Thinking skills in science **Reference:** *Suryanti, Mintohari, Widodo, W. 2004. Development of science learning. Surabaya: Unesa University Press.*	5%
13	Describe thinking skills in science and their development	Explains the dimensions of cognitive processes and knowledge, and higher order thinking skills	**Criteria:** 1.4: correct description 2.3: the description is generally correct, there is one aspect where the explanation is incorrect 3.2: the description is generally correct, there is more than one aspect where the explanation is incorrect 4.1: the description is wrong **Form of Assessment** : Participatory Activities	Cased-based Learning (CBL), Practice, Presentation and Discussion 2 X 50	Case based learning through peer-interaction (Synchronous) via Zoom/Google Meet and Asynchronous via LMS Si Dia UNESA 2 x 50	**Material:** Thinking Skills in Science **Library:** *NRC. 2012. National Science Education Standards. Washington: NAP.* **Material:** Thinking skills in science **Reference:** *Rutherford, FJ & Ahlgreb, A. 1990. Science for All Americans. New York: Oxford University Press.* **Material:** Thinking skills in science **Reference:** *Suryanti, Mintohari, Widodo, W. 2004. Development of science learning. Surabaya: Unesa University Press.*	5%

14	Describe scientific literacy	Explains scientific literacy and provides examples of how to develop it	**Criteria:** 1.4: correct description 2.3: the description is generally correct, there is one aspect where the explanation is incorrect 3.2: the description is generally correct, there is more than one aspect where the explanation is incorrect 4.1: the description is wrong **Form of Assessment** : Participatory Activities	Cased-based Learning (CBL), 2 X 50 discussions	Case based learning through peer-interaction (Synchronous) via Zoom/Google Meet and Asynchronous via LMS Si Dia UNESA 2 x 50	**Material:** Science Literacy **Library:** *NRC. 2012. National Science Education Standards. Washington: NAP.* **Material:** Science Literacy Bibliography **:** *Rutherford, FJ & Ahlgreb, A. 1990. Science for All Americans. New York: Oxford University Press.* **Material:** Science **Literacy Literature:** *Suryanti, Mintohari, Widodo, W. 2004. Development of Science Learning. Surabaya: Unesa University Press.*	5%
15	Describe the history of the development of natural sciences to recognize that natural sciences are a human endevour	Explains the history of the development of science in outline	**Criteria:** 1.4: correct description 2.3: the description is generally correct, there is one aspect where the explanation is incorrect 3.2: the description is generally correct, there is more than one aspect where the explanation is incorrect 4.1: the description is wrong **Form of Assessment** : Participatory Activities, Portfolio Assessment	Cased-based Learning (CBL), 2 X 50 Discussions	Case based learning through peer-interaction (Synchronous) via Zoom/Google Meet and Asynchronous via LMS Si Dia UNESA 2 x 50	**Material:** History of Science **Bibliography:** *Rutherford, FJ & Ahlgreb, A. 1990. Science for All Americans. New York: Oxford University Press.* **Material:** History of Science **Reference:** *Suryanti, Mintohari, Widodo, W. 2004. Development of Science Learning. Surabaya: Unesa University Press.* **Material:** History of Natural Sciences **Reference:** *NRC. 2012. National Science Education Standards. Washington: NAP.*	6%
16	UAS		**Criteria:** Performance questions are integrated during learning **Form of Assessment** : Test	100 Minute Paper And Pencil Test Method			10%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	54%
2.	Project Results Assessment / Product Assessment	5.5%
3.	Portfolio Assessment	20.5%
4.	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** abilities in the process and student learning outcomes are specific and measurable statements that identify the abilities 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.