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

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Science Basics	8420102028	Compulsory Study Program Subjects	T=2	P=0	ECTS=3.18	1	April 28, 2023

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
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Learning model	**Case Studies**

Program Learning Outcomes (PLO)

PLO study program that is charged to the course

Program Objectives (PO)

PO - 1	Utilizing science and technology as a tool to develop 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
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	Prof.Dr. Wahono Widodo, M.Si. Dr. Hasan Subekti, S.Pd., M.Pd. Ahmad Qosyim, S.Si., M.Pd. Muhamad Arif Mahdiannur, S.Pd., M.Pd. Dr. Syarif Prasetyo, S.Si., M.Si. Dyah Permata Sari, S.Pd., M.Pd. Ernita Vika Aulia, S.Pd., M.Pd. Dr. Sapti Puspitarini, S.Si., M.Si. Fikky Dian Roqobih, 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 science. 2. Explain the scope of science	**Criteria:** criteria: 1.4: the description is correct 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 incorrect **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 2 x 50	**Material:** The Nature of Science **Library:** *NRC. 2012. National Science Education Standards. Washington: NAP.* **Material:** PPT **Library:** **Material:** Nature and scope of natural sciences **Library:** *NRC. 2012. National Science Education Standards. Washington: NAP.*	5%

2	Carrying out simple inquiries in science	Make observations, inferences, and communicate the results	**Criteria:** criteria: 1.4: the description is correct 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 incorrect **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 2 x 50	**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.* **Material:** PPT **Library:**	5%
3	Mastering the components of KPS as an embodiment of inquiry in science	Formulating problems, hypotheses, controlling variables, analyzing data, and concluding	**Criteria:** criteria: 1.4: the description is correct 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 incorrect **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 2 x 50	**Material:** KPS **Library:** *Suryanti, Mintohari, Widodo, W. 2004. Development of Science Learning. Surabaya: Unesa University Press.* **Material:** PPT **Library:**	5%

4	Mastering the components of KPS as an embodiment of inquiry in science	Formulating problems, hypotheses, controlling variables, analyzing data, and concluding	**Criteria:** criteria: 1.4: the description is correct 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 incorrect **Form of Assessment** : Portfolio Assessment	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 2 x 50	**Material:** KPS **Library:** *Suryanti, Mintohari, Widodo, W. 2004. Development of Science Learning. Surabaya: Unesa University Press.* **Material:** PPT **Library:**	5%
5	Recognize physical settings and create simple mathematical modeling in natural science	Observing physical systems, taking measurements, creating simple mathematical models	**Criteria:** criteria: 1.4: the description is correct 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 incorrect **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 2 x 50	**Material:** Physics **References:** *Rutherford, FJ & Ahlgreb, A. 1990. Science for All Americans. New York: Oxford University Press.* **Material:** PPT **Library:**	5%
6	Recognize physical settings and create simple mathematical modeling in natural science	Observing physical systems, taking measurements, creating simple mathematical models	**Criteria:** criteria: 1.4: the description is correct 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 incorrect **Form of Assessment** : Participatory Activities, Portfolio Assessment	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 2 x 50	**Material:** Physics **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:** criteria: 1.4: the description is correct 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 incorrect **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 2 x 50	**Material:** evolution **Bibliography:** *Rutherford, FJ & Ahlgreb, A. 1990. Science for All Americans. New York: Oxford University Press.* **Material:** PPT **Library:**	5%

8	Midterm exam		**Form of Assessment** : Test	UTS 2 x 50			15%
9	Recognize the material world and its changes and how to investigate them	Recognize the material world and its changes and how to investigate them	**Criteria:** criteria: 1.4: the description is correct 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 incorrect **Form of Assessment** : Participatory Activities	Presentation 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 2 x 50	**Matter:** Matter and its changes **Bibliography:** *Rutherford, FJ & Ahlgreb, A. 1990. Science for All Americans. New York: Oxford University Press.* **Material:** PPT **Library:**	5%
10	Recognize the material world and its changes and how to investigate them	Recognize the material world and its changes and how to investigate them	**Criteria:** criteria: 1.4: the description is correct 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 incorrect **Form of Assessment** : Participatory Activities	Presentation 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 2 x 50	**Matter:** Matter and its changes **Bibliography:** *Rutherford, FJ & Ahlgreb, A. 1990. Science for All Americans. New York: Oxford University Press.* **Material:** PPT **Library:**	5%

11	Explain the values of IPA	Provide examples of science values that are useful in life	**Criteria:** criteria: 1.4: the description is correct 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 incorrect **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 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.* **Material:** PPT **Library:**	5%
12	Describe thinking skills in science and their development	Explains the dimensions of cognitive processes and knowledge, and higher order thinking skills	**Criteria:** criteria: 1.4: the description is correct 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 incorrect **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 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.* **Material:** PPT **Library:**	5%

13	Describe thinking skills in science and their development	Explains the dimensions of cognitive processes and knowledge, and higher order thinking skills	**Criteria:** criteria: 1.4: the description is correct 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 incorrect **Form of Assessment** : Participatory Activities, Portfolio Assessment	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 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.* **Material:** PPT **Library:**	5%
14	Describe scientific literacy and its development	Explains scientific literacy and provides examples of how to develop it	**Criteria:** criteria: 1.4: the description is correct 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 incorrect **Form of Assessment** : Participatory Activities, Portfolio Assessment	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 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.* **Material:** PPT **Library:**	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 selected natural sciences	**Criteria:** criteria: 1.4: the description is correct 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 incorrect **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 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.* **Material:** PPT **Library:**	5%
16	Final exams		**Form of Assessment** : Test				15%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	57.5%
2.	Portfolio Assessment	12.5%
3.	Test	30%
		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.