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

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Local Wisdom in Physics	8420302254	Physics Education Philosophy and Curriculum	T=2	P=0	ECTS=3.18	6	July 17, 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

Program Objectives (PO)

PO - 1	Able to communicate effectively in solving local physics problems.
PO - 2	Able to collaborate effectively in solving local wisdom problems in Physics and adapting to the situations faced through a local wisdom approach to Physics.
PO - 3	Able to process information effectively in solving local wisdom problems in Physics and adapting to the situations faced through a local wisdom approach to Physics.
PO - 4	Able to think at a high level (complex) effectively in solving local wisdom problems in Physics and adapting to the situations faced through a local wisdom approach to Physics.

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 Physics Local Wisdom course has four main parts, namely the essence of physics local wisdom and its scope; Reconstructing scientific knowledge based on local wisdom; Science education as a vehicle for the inculturation process; and Physical science research in the context of culture and customs. The lecture strategies used in this lecture are lecture methods, question and answer, discussion, assignments, presentations and mini projects.
References	**Main :**

1. Sudarmin. 2013. Pendidikan Karakter: Etnosains dan Kearifan Lokal (Konsep dan Penerapannya dalam Penelitian dan Pembelajaran Sains) . Semarang: Swadaya Manunggal
2. Winarti A, Almubarak, Muna K. 2018. Inovasi Pembelajaran Kimia Berbasis ETNOSAINS. Banjarmasin: Program Studi Pendidikan Kimia FKIP ULM
3. Hewson MG. 2015. Embracing Indigenous Knowledge in Science and Medical Teaching. New York: Springer
4. Hendry J. 2014. Science and Sustainability Learning from Indigenous Wisdom. New York: Palgrave and Macmillan
5. Simonyi K. 2012. A Cultural History of Physics (Translated by David Kramer). Florida: CRC Press
6. Franklin S. 1995. Science as Culture, Cultures of Science. Annual Review of Anthropology 24: 163-184. https://www.jstor.org/stable/2155934?origin=JSTOR-pdf
7. Suprapto dkk. 2021. Kearifan lokal kerapan sapi dari tinjauan etnosains dan etnofisika. Surabaya: Kunfayakun

Supporters:

1. Buku, artikel ilmiah, dan sumber lain yang relevan

Supporting lecturer

Dra. Suliyanah, M.Si.
Setyo Admoko, S.Pd., M.Pd.
Prof. Nadi Suprapto, S.Pd., M.Pd., Ph.D.
Utama Alan Deta, S.Pd., M.Pd., M.Si.
Dr. Oka Saputra, 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	Understand the essence of local physics wisdom and its scope	1.Explain the nature of local physics wisdom 2.Explaining Local Wisdom as a scientific phenomenon 3.Explaining Character Education based on Local Wisdom	**Criteria:** Qualitative **Form of Assessment** : Participatory Activities	Small Group Discussion 2 x 50 minutes	Small Group Discussion 2 x 50 minutes	**Material:** The essence of local physics wisdom and its scope **Reader:** *Sudarmin. 2013. Character Education: Ethnoscience and Local Wisdom (Concept and Application in Science Research and Learning). Semarang: Self-Help Manunggal*	5%
2	Understand the nature of ethnoscience and its scope	1.Explain the nature of ethnoscience 2.Explaining Ethnoscience and Ecology 3.Explain the meaning of Ethnotechnology and Ethnomethodology	**Criteria:** Qualitative **Form of Assessment** : Participatory Activities	Small Group Discussion 2 x 50 minutes	Small Group Discussion 2 x 50 minutes	**Material:** The essence of ethnoscience and its scope **Reader:** *Sudarmin. 2013. Character Education: Ethnoscience and Local Wisdom (Concept and Application in Science Research and Learning). Semarang: Self-Help Manunggal*	5%

3	Understand how to reconstruct scientific knowledge based on local wisdom	1. Distinguish between Indigenous Science and Scientific Science 2. Explains the process of reconstructing scientific knowledge 3. Explaining the results of Ethnoscience-based Science	**Criteria:** Qualitative **Form of Assessment** : Participatory Activities	Small Group Discussion 2 x 50 minutes	Small Group Discussion 2 x 50 minutes	**Material:** Reconstructing scientific knowledge based on local wisdom **Reader:** *Sudarmin. 2013. Character Education: Ethnoscience and Local Wisdom (Concept and Application in Science Research and Learning). Semarang: Self-Help Manunggal*	5%
4	Understand the concept of Science Education as a vehicle for the inculturation process	1. Explaining cultural aspects of science learning 2. Analyzing Science based on a multicultural perspective	**Criteria:** Qualitative **Form of Assessment** : Participatory Activities	Small Group Discussion 2 x 50 minutes	Small Group Discussion 2 x 50 minutes	**Material:** Science education as a vehicle for the inculturation process **Reader:** *Sudarmin. 2013. Character Education: Ethnoscience and Local Wisdom (Concept and Application in Science Research and Learning). Semarang: Self-Help Manunggal*	5%
5	Understand community science research methods in the context of local wisdom and culture	Examining ethnoscience-based qualitative research methods	**Criteria:** Qualitative **Form of Assessment** : Participatory Activities	Small Group Discussion 2 x 50 minutes	Small Group Discussion 2 x 50 minutes	**Material:** • Community science research methods in the context of local wisdom and culture **Reader:** *Sudarmin. 2013. Character Education: Ethnoscience and Local Wisdom (Concept and Application in Science Research and Learning). Semarang: Self-Help Manunggal*	5%
6	Understand science and physics research in the context of local wisdom and culture	Analyze the latest science and physics research in the context of local wisdom and culture	**Criteria:** Qualitative **Form of Assessment** : Participatory Activities	Discussion and Presentation 2 x 50 minutes	Discussion and Presentation 2 x 50 minutes	**Material:** • Science and physics research in the context of local wisdom and culture **Library:** *Books, scientific articles and other relevant sources*	5%

7	Understand science and physics research in the context of local wisdom and culture	Analyze the latest science and physics research in the context of local wisdom and culture	**Criteria:** Qualitative **Form of Assessment** : Participatory Activities	Discussion and Presentation 2 x 50 minutes	Discussion and Presentation 2 x 50 minutes	**Material:** • Science and physics research in the context of local wisdom and culture **Library:** *Books, scientific articles and other relevant sources*	5%
8	Midterm Evaluation / Midterm Exam	1. Explain the nature of local physics wisdom 2. Explaining Local Wisdom as a scientific phenomenon 3. Explaining Character Education based on Local Wisdom 4. Explain the nature of ethnoscience 5. Explaining Ethnoscience and Ecology 6. Explain the meaning of Ethnotechnology and Ethnomethodology 7. Distinguish between Indigenous Science and Scientific Science 8. Explains the process of reconstructing scientific knowledge 9. Explaining the results of Ethnoscience-based Science 10. Explaining cultural aspects of science learning 11. Analyzing Science based on a multicultural perspective 12. Examining ethnoscience-based qualitative research methods	**Criteria:** Quantitative **Form of Assessment** : Participatory Activities	Written Test 2 x 50 minutes	Written Test 2 x 50 minutes	**Material:** Mid-semester Evaluation **Reference:** *Sudarmin. 2013. Character Education: Ethnoscience and Local Wisdom (Concept and Application in Science Research and Learning). Semarang: Self-Help Manunggal*	10%
9	Able to design Physics learning based on local and cultural wisdom	Applying local and cultural wisdom in Physics Learning	**Criteria:** Qualitative **Form of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Discussion and Presentation 2 x 50 minutes	Discussion and Presentation 2 x 50 minutes	**Material:** • Physics learning in the context of local wisdom and culture **Reader:** *Sudarmin. 2013. Character Education: Ethnoscience and Local Wisdom (Concept and Application in Science Research and Learning). Semarang: Self-Help Manunggal*	5%

10	Able to design Physics learning based on local and cultural wisdom	Applying local and cultural wisdom in Physics Learning	**Criteria:** Qualitative **Form of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Discussion and Presentation 2 x 50 minutes	Discussion and Presentation 2 x 50 minutes	**Material:** • Physics learning in the context of local wisdom and culture **Reader:** *Sudarmin. 2013. Character Education: Ethnoscience and Local Wisdom (Concept and Application in Science Research and Learning). Semarang: Self-Help Manunggal*	5%
11	Carrying out a mini project on Physics in the context of local wisdom and culture	Design and implement a mini project on Physics in the context of local wisdom and culture.	**Criteria:** Qualitative **Form of Assessment** : Project Results Assessment / Product Assessment	Discussion and Presentation 2 x 50 minutes	Discussion and Presentation 2 x 50 minutes	**Material:** • Mini Project on Physics in the context of local wisdom and culture **Library:** *Books, scientific articles and other relevant sources*	5%
12	Carrying out a mini project on Physics in the context of local wisdom and culture	Design and implement a mini project on Physics in the context of local wisdom and culture.	**Criteria:** Qualitative **Form of Assessment** : Project Results Assessment / Product Assessment	Discussion and Presentation 2 x 50 minutes	Discussion and Presentation 2 x 50 minutes	**Material:** • Mini Project on Physics in the context of local wisdom and culture **Library:** *Books, scientific articles and other relevant sources*	5%
13	Carrying out a mini project on Physics in the context of local wisdom and culture	Design and implement a mini project on Physics in the context of local wisdom and culture.	**Criteria:** Qualitative **Form of Assessment** : Project Results Assessment / Product Assessment	Discussion and Presentation 2 x 50 minutes	Discussion and Presentation 2 x 50 minutes	**Material:** • Mini Project on Physics in the context of local wisdom and culture **Library:** *Books, scientific articles and other relevant sources*	5%
14	Reporting a mini project on Physics in the context of local wisdom and culture in the form of a scientific article	Create scientific articles based on mini projects that have been implemented.	**Criteria:** Qualitative **Form of Assessment** : Project Results Assessment / Product Assessment	Discussion and Presentation 2 x 50 minutes	Discussion and Presentation 2 x 50 minutes	**Material:** Scientific articles about Physics in the context of local wisdom and culture **Library:** *Books, scientific articles and other relevant sources*	5%
15	Reporting a mini project on Physics in the context of local wisdom and culture in the form of a scientific article	Create scientific articles based on mini projects that have been implemented.	**Criteria:** Qualitative **Form of Assessment** : Project Results Assessment / Product Assessment	Discussion and Presentation 2 x 50 minutes	Discussion and Presentation 2 x 50 minutes	**Material:** Scientific articles about Physics in the context of local wisdom and culture **Library:** *Books, scientific articles and other relevant sources*	5%

16	Final Semester Evaluation / Final Semester Examination	Present scientific articles based on mini projects that have been implemented	**Criteria:** Qualitative **Form of Assessment** : Project Results Assessment / Product Assessment	2 x 50 minute Project Assignments	2 x 50 minute Project Assignments	**Material:** Final Semester Evaluation **Reference:** *Sudarmin. 2013. Character Education: Ethnoscience and Local Wisdom (Concept and Application in Science Research and Learning). Semarang: Self-Help Manunggal*	20%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	50%
2.	Project Results Assessment / Product Assessment	50%
		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.