	Universitas Negeri Surabaya Faculty of Education, Early Childhood Education Teacher Education Undergraduate Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
AUD Science Learning Development	8620702211	Compulsory Study Program Subjects	T=2	P=0	ECTS=3.18	2	May 2, 2023

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 which is charged to the course	
PLO-5	Mastering pedagogical skills in early childhood learning based on national cultural values
PLO-7	Mastering the curriculum, learning theory, learning models and early childhood assessment in managing PAUD implementation.

Program Objectives (PO)	
PO - 1	Students are able to take responsibility for their work while attending science learning courses for early childhood honestly, independently, and never give up in making the right decisions in the field of Early Childhood Education with academic ethics
PO - 2	Students are able to demonstrate independent, quality and measurable performance based on scientific rules, procedures and ethics in science learning lectures for early childhood
PO - 3	Students create innovative work according to global needs in the field of early childhood
PO - 4	Students are able to analyze the concept of innovative work according to global needs in the field of early childhood

PLO-PO Matrix

P.O	PLO-5	PLO-7
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	Science is a field that is used as a vehicle for developing aspects of cognitive development and various other related aspects of development and activities that occur in everyday life. Science can be seen as the content material for learning activities in early childhood education institutions. This course provides a number of competencies related to students' ability to understand, analyze, use and develop theoretical concepts about science education in early childhood. Apart from that, students can also elaborate on various early childhood science learning designs by using various types and processes of play in various real life contexts that are meaningful and fun. The learning strategies used are lecture methods, project based learning, group discussions and simulations.

References

Main :

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2. Bentzen, Warren R. 2005. Seeing Young Children: A Guide to Observing and Recording Behavior. 5th edition . New York: Thomas Delmar Learning.
3. Eaty, Janice J. 2010. Observing Development of Young Child . New Jersey: Pearson Education, Inc.
4. Bennett., William, Chester E. Finn and John T.E. Cribb. 2007. The Educated C hild . New York: The Free Press.
5. Brewer, Jo An. 2007. Introduction to Early Childhood Education. Preschool through Primary Grade . Boston: Pearson Education, Inc.
6. Charlesworth, Rosalind and Karen K. Lind. 1995. Math and Scien ce . New York: Delmar Publisher.
7. Dodge, Diane Trister., Laura J.Colker. 1999. The Creative Curricuum for Early Childhood . Washington DC: Teaching Strategies Inc.
8. Essa, Eva L. 2003. Introduction to Early Chldhood Education . New York: Thomson Delman Learning Inc.
9. Hoorn, Etc. 2007. Play at the Center Curriculum . New Jersey: Pearson Merril Prentice Hall., Inc.
10. Hughes, Fergus P. 2010. Children, Play and Development . California: Sage Publications, Inc.
11. Hansen., Alice. 2011. Children's Errors in Mathem atics . Cathedral Yard: Learning.
12. Matters Jackman, Hilda. 2009. Early Education Curriculum. A Child's Connection to the World . Belmont: Delmar Cengage Learning.
13. Morrison, George S. 2011. Early Childhood Curriculum Today . Boston: Pearson Educational International.
14. Warner, Laverne, and Sower, Judith. 2005. Educating Young Children: from Preschool through Primary Grade . Boston: Pearson Education, Inc.
15. Puckett, M.B., Diffily, D. 2004. Teaching Young Children. An Introduction to The Early Childhood Profession. 2nd ed . Canada: Thomson Learning Inc.
16. O'connor, G., Fragkiadaki, G., Fleer, M., & Rai, P. (2021). Early childhood science education from 0 to 6: A literature review. Education sciences, 11(4), 178.
17. Campbell, C., & Howitt, C. (Eds.). (2023). Science in early childhood. Cambridge University Press.

Supporters:

1. Camilla, A., & Ningrum, M. A. (2023). Pengembangan Mibeba Games (Mitigasi Bencana Banjir) untuk Menstimulasi Keterampilan Berkomunikasi Anak Usia 5-6 Tahun. SELING: Jurnal Program Studi PGRA, 9(2), 276-289.
2. Ningrum, M. A., Adhe, K. R., & Widayanti, M. D. (2023). Pengembangan Buku Ajar Tema Peduli Lingkungan untuk Meningkatkan Keterampilan Berpikir Kreatif Anak Usia 5-6 Tahun: Development of Environmental Care Theme Textbooks to Improve Creative Thinking Skills for Children Aged 5-6 Years. Indonesian Journal of Early Childhood: Jurnal Dunia Anak Usia Dini, 5(2), 347-361.
3. Fatmawati, D., & Ningrum, M. A. (2019). Pengaruh Metode Eksperimen terhadap Kemampuan Sains Mengenal Benda Cair pada Anak Kelompok B TK Hidayatullah Lidah Kulon 1/58 Surabaya. Paud Teratai, 8 (3), 1–5. Paud Teratai.
4. Palapessy, X., Ningrum, M. A., Adhe, K. R., & Widayanti, M. D. (2023). Analisis Project Based Learning (PjBL) Untuk Kemampuan Berpikir Kreatif Anak Usia 5-6 Tahun. PENDIPA Journal of Science Education, 7(3), 431-438.
5. Laili, R., & Ningrum, M. A. (2023). Survei Program Kegiatan Mitigasi Bencana di Lembaga PAUD. EDUKASIA: Jurnal Pendidikan dan Pembelajaran, 4(2), 2429-2436.

Supporting lecturer	Sri Widayati, S.Pd., M.Pd. Mallevi Agustin Ningrum, 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 urgency of science education	score	**Criteria:** 0-100 **Form of Assessment** : Practice / Performance	Lectures, questions and answers, and discussions 2 X 50	Lectures, questions and answers, and discussions 2 X 50	**Material:** The urgency of science education **References:** *Warner, Laverne, and Sower, Judith. 2005. Educating Young Children: from Preschool through Primary Grade. Boston: Pearson Education, Inc.*	3%

2	Analyze the meaning, goals, functions of science education for AUD	Students can create a concept map of the meaning, goals and functions of AUD science education	**Criteria:** 0-100 **Form of Assessment** : Practice / Performance	lectures, questions and answers, and discussions 2 X 50	lectures, questions and answers, and discussions 2 X 50	**Material:** meaning, objectives, function of science education for AUD **Reader:** *Charlesworth, Rosalind and Karen K. Lind. 1995. Mathematics and Science . New York: Delmar Publishers.*	3%
3	Analyzing general principles in AUD science learning	Students are able to create concept maps of general principles in AUD science learning	**Criteria:** 0-100 **Form of Assessment** : Practice / Performance	lectures, questions and answers, and discussions 2 X 50	lectures, questions and answers, and discussions 2 X 50	**Material:** Analyzing general principles in AUD science learning. **Reference:** *Charlesworth, Rosalind and Karen K. Lind. 1995. Mathematics and Science . New York: Delmar Publishers.*	3%
4	Describe the meaning, scope and objectives of content and science education in early childhood scientific inquiry content (Scientific Inquiry)	Students make content study reports and learning about scientific investigations in early childhood	**Criteria:** 0-100 **Form of Assessment** : Practice / Performance	lectures, questions and answers, and discussions 2 X 50	lectures, questions and answers, and discussions 2 X 50	**Material:** Report on AUD science learning based on field studies. **Reference:** *Hughes, Fergus P. 2010. Children, Play and Development. California: Sage Publications, Inc.* **Material:** Describe the meaning, scope and objectives of content and science education in early childhood scientific inquiry content (Scientific Inquiry). **References:** *Charlesworth, Rosalind and Karen K. Lind. 1995. Mathematics and Science . New York: Delmar Publishers.*	3%

5	Describe the meaning, scope and objectives of science education content in science and technology content (Science and Technology)	Students make content study reports on the meaning, scope, objectives, and science education in science and technology content and learning about science and technology.	**Criteria:** 0-100 **Form of Assessment** : Practice / Performance	lectures, questions and answers, and discussions 2 X 50	lectures, questions and answers, and discussions 2 X 50	**Material:** Report on the content of science and technology education **Bibliography:** *Bennett., William, Chester E. Finn and John TE Cribb. 2007. The Educated Child . New York: The Free Press.* **Material:** Describe the meaning, scope and objectives of science education content in science and technology content (Science and Technology). **References:** *Charlesworth, Rosalind and Karen K. Lind. 1995. Mathematics and Science . New York: Delmar Publishers.*	3%
6	Describe the meaning, scope and objectives of content and science education in disaster mitigation science content	Students are able to make reports about natural disaster mitigation education (floods, earthquakes, landslides, etc.)	**Criteria:** 0-100 **Form of Assessment** : Project Results Assessment / Product Assessment	lectures, questions and answers, and discussions 2 X 50	lectures, questions and answers, and discussions 2 X 50	**Material:** Learning based on natural disaster mitigation **Readers:** *Dodge, Diane Trister., Laura J. Colker. 1999. The Creative Curricuum for Early Childhood. Washington DC: Teaching Strategies Inc.* **Material:** Describe the meaning, scope and objectives of content and science education in disaster mitigation science content. **Reference:** *Charlesworth, Rosalind and Karen K. Lind. 1995. Mathematics and Science . New York: Delmar Publishers.*	10%

7	Describe the meaning, scope and objectives of content and science education in disaster mitigation science content	Students are able to make reports about natural disaster mitigation education (floods, earthquakes, landslides, etc.)	**Criteria:** 0-100 **Form of Assessment** : Project Results Assessment / Product Assessment	Seminars, workshops, discussions 2 X 50	Seminars, workshops, discussions 2 X 50	**Material:** Report on natural disaster mitigation-based learning. **References:** *Dodge, Diane Trister., Laura J. Colker. 1999. The Creative Curricuum for Early Childhood. Washington DC: Teaching Strategies Inc.*	10%
8	Midterm Exam (UTS)	Students can work on UTS questions	**Criteria:** 0-100 **Form of Assessment** : Test	Written Test 2 X 50	Written Test 2 X 50	**Material:** USS Questions **Reference:** *Bentzen, Warren R. 2005. Seeing Young Children: A Guide to Observing and Recording Behavior. 5th edition. New York: Thomas Delmar Learning.*	10%
9	Students understand science learning for early childhood and examples include; biological sciences, physics, earth sciences, ecology, etc.	1. Students are able to analyze activities and examples of science activities that fall into which type of science category	**Criteria:** 1-100 **Form of Assessment** : Practice / Performance	lectures, questions and answers, and discussions 2 X 50	lectures, questions and answers, and discussions 2 X 50	**Material:** students know about the limitations of science learning materials for early childhood. **Reference:** *Charlesworth, Rosalind and Karen K. Lind. 1995. Mathematics and Science . New York: Delmar Publishers.* **Material:** students know about the limitations of science learning materials for early childhood **. Reference:**	3%
10	Students understand science learning for early childhood and examples include; biological sciences, physics, earth sciences, ecology, etc.	1. Students are able to analyze activities and examples of science activities that fall into which type of science category	**Criteria:** 1-100 **Form of Assessment** : Practice / Performance	lectures, questions and answers, discussions, and assignments 2 X 50	lectures, questions and answers, discussions, and assignments 2 X 50	**Material:** students are able to design life science and physical science activities. **Reference:** *Charlesworth, Rosalind and Karen K. Lind. 1995. Mathematics and Science . New York: Delmar Publishers.*	3%

11	Students are able to design, apply and evaluate science activities for children	1. the ability to design science activities step by step2. able to evaluate scientific activities that have been carried out	**Criteria:** 0-100 **Form of Assessment** : Practice / Performance	lecture, question and answer, discussion, assignment 2 X 50	lecture, question and answer, discussion, assignment 2 X 50	**Material:** Designing environmental science earth space, nutrition and health activities **Reference:** *Matters Jackman, Hilda. 2009. Early Education Curriculum. A Child's Connection to the World. Belmont: Delmar Cengage Learning.*	3%
12	Students are able to create learning media related to the science learning plans they create	score	**Criteria:** 0-100 **Form of Assessment** : Practice / Performance	lectures, questions and answers, discussions, and assignments 2 X 50	lectures, questions and answers, discussions, and assignments 2 X 50	**Material:** Students are able to create learning media related to the science learning plans they create. **References:** *Charlesworth, Rosalind and Karen K. Lind. 1995. Mathematics and Science . New York: Delmar Publishers.*	6%
13	Students are able to create science learning assessment rubrics	score	**Criteria:** 0-100 **Form of Assessment** : Project Results Assessment / Product Assessment	lectures, questions and answers, discussions, and assignments 2 X 50	lectures, questions and answers, discussions, and assignments 2 X 50	**Material:** Students are able to create science learning assessment rubrics. **References:** *Charlesworth, Rosalind and Karen K. Lind. 1995. Mathematics and Science . New York: Delmar Publishers.*	10%
14	Students are able to apply the results of science learning designs in PAUD institutions	1. know the differences and similarities between mathematics and science	**Criteria:** 0-100 **Form of Assessment** : Project Results Assessment / Product Assessment	lectures, questions and answers, discussions, and assignments 2 X 50	lectures, questions and answers, discussions, and assignments 2 X 50	**Material:** applying the results of science learning designs in PAUD institutions. **Library:** *Charlesworth, Rosalind and Karen K. Lind. 1995. Mathematics and Science . New York: Delmar Publishers.*	10%

15	students are able to analyze the results of implementing science learning designs in PAUD institutions	score	**Criteria:** 0-100 **Form of Assessment** : Project Results Assessment / Product Assessment	lectures, questions and answers, discussions, and assignments 2 X 50	lectures, questions and answers, discussions, and assignments 2 X 50	**Material:** analyzing the results of implementing science learning designs in PAUD institutions. **Library:** *Charlesworth, Rosalind and Karen K. Lind. 1995. Mathematics and Science . New York: Delmar Publishers.*	10%
16	UAS	score	**Criteria:** 0-100 **Form of Assessment** : Test	UAS 2 X 50	UAS 2 X 50	**Material:** UAS **Bibliography:** *Charlesworth, Rosalind and Karen K. Lind. 1995. Mathematics and Science . New York: Delmar Publishers.*	10%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Project Results Assessment / Product Assessment	50%
2.	Practice / Performance	30%
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** 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.