



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 |
|----------------------|------------|---------------------|-----------------------------------|----------------------------------|------------------|
| Ecology | 8420103033 | | T=3 P=0 ECTS=4.77 | 3 | July 19, 2024 |
| AUTHORIZATION | | SP Developer | Course Cluster Coordinator | Study Program Coordinator | |
| | | | | Prof. Dr. Erman, M.Pd. | |

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| Learning model | Case Studies |
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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-13 Demonstrate knowledge of integrated science (physics, chemistry, and biology)

Program Objectives (PO)

PO - 1 Mastering theories regarding the scope of ecology and its relationship with other sciences related to ecosystem concepts and applying knowledge to solve problems procedurally through a scientific approach supported by the use of science and technology.

PO - 2 Analyze information regarding the concept of energy in relation to the eating process and biogeochemical cycles and apply knowledge to solve problems procedurally through a scientific approach supported by the use of science and technology

PO - 3 Analyze information regarding limiting factors in relation to communities and populations and apply knowledge to solve problems procedurally through a scientific approach supported by the use of science and technology.

PO - 4 Analyze information about species and individuals in relation to ecoenergetics and ecosystem development and apply knowledge to solve problems procedurally through a scientific approach supported by the use of science and technology.

PLO-PO Matrix

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|--|------|-------|--------|
| | P.O | PLO-5 | PLO-13 |
| | PO-1 | | |
| | PO-2 | | |
| | PO-3 | | |
| | PO-4 | | |

PO Matrix at the end of each learning stage (Sub-PO)

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| | 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 Understand, and communicate basic concepts of Ecology regarding: understanding and application of the principles and concepts of ecosystems, individuals, populations, communities, ecosystems; vegetation: productivity, succession: environmental factors, biomes, tropical land vegetation; tolerance range, time-temperature concept; food relationship: ecological niche; growth parameters; interaction and regulation; population interactions and regulation; and conservation. Presented in the form of theory and practice.

References **Main :**

1. Campbell, N. A. et al. (2008). *Biology; Eighth Edition*. San Fransisco: Pearson, Benjamin Cummings.
2. Van der Maarel, Eddy. Ed. 2005. *Vegetation Ecology*. Printed and bound in the United Kingdom. by Blakwell Science Ltd a Black Well Publisng Company.
3. Myers, Judith H. and Bazely Dawn R. 2003. *Ecology and Control of Introduced Plants*. The Edinburgh Building, Cambrige CB2 2RU, United Kingdom. Cambridge Universty Press.
4. Mayhew, Peter J. 2006. *Discovering Evolutionary Ecology*. Published in the United States; by Oxford University Press Inc., New York.
5. Mackenzie, A. A.S. Bali & S.R. Virdee. 1998. *Instant Note In Ecology*. Singapore: Bios Scientific Publishers Ltd.
6. Spellerberg, Ian, F. Longman. 1998. *Conservation Biology*. Singapore Publishers Ltd.
7. Gough, A. (2004). Achieving "Sustainability Education" in Primary Schools as a Result of the Victorian Science in Schools Research Project. *Australian Journal of Environmental Education*, Vol. 20 (2).
8. Gough, A., & Sharpley, B. (2005). Education for a sustainable future: a National Environmental Education Statement for Australia school. Diambil dari <http://www.environment.gov.au/education/publications/pubs/national-action-plan.pdf>

Supporters:

Supporting lecturer
 Dr. Dyah Astriani, S.Pd., M.Pd.
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| 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 | 1.1.1 Explain the basic concepts of Ecology 2.1.2 Write down the components of Ecology 3.1.3 Explain the relationship between ecology and other sciences 4.1.4 Identify problems within the scope of Ecology 5.1.5 Develop predictions regarding the impact of the appearance of arapaima fish in Indonesian waters 6.1.6 Link data and information about arapaima fish | 1.Explain the basic concepts of Ecology 2.Write down the components of Ecology 3.Explain the relationship between ecology and other sciences 4.Identify problems related to ecology presented through articles, for example regarding the Arapaima fish 5.Develop predictions regarding the impact of the appearance of arapaima fish in Indonesian waters 6.Connecting data and information about Arapaima fish | 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, Tests | * Learning activities regarding the scope of ecology are carried out by utilizing environmental trending topics as discussion material, for example about the Arapaima fish population in Indonesian waters which threatens native Indonesian aquatic organisms. * Through these cases, students learn to analyze problems and propose possible solutions * Students carry out activities guided by LKM which requires students to think critically and actively 3 X 50 | * Online learning activities can be carried out by utilizing Gmeet, using video media from YouTube. 1 x 90 | Material: Scope of ecology Reference: <i>Odum, EP 1998. Basics of Ecology. Yogyakarta: Gadjah Mada University Press.</i> Material: Units of living things in ecosystems References: <i>Campbell, NA et al. (2008). Biology; Eighth Edition. San Francisco: Pearson, Benjamin Cummings.</i> | 10% |

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| 2 | <p>1.2.1 Explain the concept, components and productivity of ecosystems</p> <p>2.2.2 Explain the types of ecosystems and interactions between ecosystem components</p> <p>3.2.3 Identify productivity problems in polluted waters</p> <p>4.2.4 Make predictions based on articles about productivity in polluted aquatic ecosystems.</p> <p>5.2.5 Link information about pollutants that influence water productivity</p> <p>6.2.6 Design solutions to maintain productivity in waters</p> | <p>1.Explain the concept, components and productivity of ecosystems</p> <p>2.Explain the various types of ecosystems and interactions between ecosystem components</p> <p>3.Identifying productivity problems in polluted waters</p> <p>4.Make predictions based on articles about productivity in polluted aquatic ecosystems</p> <p>5.Linking information about pollutants that influence water productivity</p> | <p>Criteria:</p> <p>1.4: correct description</p> <p>2.3: the description is generally correct, there is one aspect where the explanation is incorrect</p> <p>3.2: the description is generally correct, there is more than one aspect where the explanation is incorrect</p> <p>4.1: the description is wrong</p> <p>Forms of Assessment :</p> <p>Participatory Activities, Practical Assessment, Practical / Performance</p> | <p>* Learning activities regarding the concept of ecosystems and productivity are carried out by utilizing articles from the mass media regarding the large amount of baby diaper waste in rivers as discussion material</p> <p>* Through these articles, students learn to analyze problems and propose possible solutions</p> <p>* Students carry out activities with LKM guidance requires students to think critically and actively</p> <p>* Performance Assignments (products) are carried out by giving assignments to students to study literature whose results are realized in the form of a mind map about ecosystems</p> <p>3 X 50</p> | <p>* Learning is done using Gmeet or using Vinesa</p> <p>* The learning media used is videos about news related to problems occurring in the environment</p> <p>1 x 90</p> | <p>Material: ecosystem concept and productivity</p> <p>References: Odum, EP 1998. <i>Basics of Ecology</i>. Yogyakarta: Gadjah Mada University Press.</p> <p>-----</p> <p>Material: aquatic productivity</p> <p>References: Spellerberg, Ian, F. Longman. 1998. <i>Conservation Biology</i>. Singapore Publishers Ltd.</p> | 5% |
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| 3 | <p>1.2.1 Explain the basic concepts of energy and productivity</p> <p>2.2.2 Explain primary and secondary productivity</p> <p>3.2.3 Identify problems regarding energy in the environment</p> <p>4.2.4 Make predictions based on articles about bioenergy in waste</p> <p>5.2.5 Link data about productivity to energy needs in the environment</p> <p>6.2.6 Write down information relevant to the concept of energy and productivity</p> | <p>1. Students are able to explain the basic concepts of energy and productivity</p> <p>2. Students are able to explain primary and secondary productivity</p> <p>3. Students are able to identify problems regarding energy in the environment</p> <p>4. Students are able to make predictions based on articles about bioenergy in waste</p> <p>5. Students are able to relate data about productivity to energy needs in the environment</p> | <p>Criteria:</p> <p>1.4: correct description</p> <p>2.3: the description is generally correct, there is one aspect where the explanation is incorrect</p> <p>3.2: the description is generally correct, there is more than one aspect where the explanation is incorrect</p> <p>4.1: the description is wrong</p> <p>Form of Assessment : Participatory Activities, Portfolio Assessment</p> | <p>* Learning activities regarding the concept of energy and productivity are carried out by utilizing articles from the mass media regarding piles of waste which can produce bioenergy so that it is useful for society as discussion material</p> <p>* Through these articles, students learn to analyze problems and propose possible solutions</p> <p>* Students carry out activities with LKM guidance that requires students to think critically and actively</p> <p>* Performance Assignments (products) are carried out by giving assignments to students for literature study whose results are realized in the form of a mind map about energy concepts</p> <p>* Students are asked to present the results of group discussions in front of the class</p> <p>3 X 50</p> | <p>* Learning is done using Gmeet or using Vinesa</p> <p>* The learning media used is a video about the benefits obtained from a pile of 1 x 90 rubbish</p> | <p>Material: Basic concepts of energy</p> <p>Reference: <i>Odum, EP 1998. Basics of Ecology. Yogyakarta: Gadjah Mada University Press.</i></p> <hr/> <p>Material: relationship between productivity and energy</p> <p>Reference: <i>Spellerberg, Ian, F. Longman. 1998. Conservation Biology. Singapore Publishers Ltd.</i></p> | 5% |
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| 4 | <p>1.2.7 Describe the role of organisms in ecosystems</p> <p>2.2.8 Describe chains, food webs, trophic structures and ecological pyramids</p> <p>3.2.9 Analyze the role of organisms in an ecosystem</p> <p>4.2.10 Arranging food chains and webs in an ecosystem</p> <p>5.2.11 Identify problems that arise as a result of food chain imbalance</p> <p>6.2.12 Make predictions due to the dominant role of organisms in the ecosystem</p> <p>7.2.13 Linking data and information regarding the eating process</p> <p>8.2.14 Design solutions to overcome the dominance of certain organisms in the food chain</p> | <p>1. Describe chains, food webs, trophic structures and ecological pyramids</p> <p>2. Analyze the role of organisms in an ecosystem</p> <p>3. Arranging food chains and webs in an ecosystem</p> <p>4. Identify problems that arise as a result of food chain imbalances</p> <p>5. Make predictions due to the dominant role of organisms in the ecosystem</p> <p>6. Connecting data and information regarding the eating process</p> | <p>Criteria: Mind map assessment refers to a rubric</p> <p>Form of Assessment : Participatory Activities, Portfolio Assessment</p> | <p>* Learning activities regarding food chains and food webs are carried out by utilizing articles about the phenomenon of the population of one organism exceeding the population of other organisms as discussion material</p> <p>* Through these articles, students learn to analyze problems and propose possible solutions</p> <p>* Students carry out activities by LKM guide that requires students to think critically and actively</p> <p>* Performance Assignments (products) are carried out by giving assignments to students for literature study whose results are realized in the form of a mind map about the eating process</p> <p>* Students are asked to present the results of group discussions in front of the class</p> <p>3 X 50</p> | <p>* Learning is done using Gmeet or using Vinesa</p> <p>* The learning media used is a video about the population of an organism that is growing very rapidly and its impact on the environment.</p> <p>1 x 90</p> | <p>Material: Food chains and food webs</p> <p>References: <i>Campbell, NA et al. (2008). Biology; Eighth Edition. San Francisco: Pearson, Benjamin Cummings.</i></p> <hr/> <p>Material: trophic structure and ecological pyramids</p> <p>Reference: <i>Odum, EP 1998. Basics of Ecology. Yogyakarta: Gadjah Mada University Press.</i></p> | 8% |
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| 5 | <p>1.2.15 Understand the concept of biogeochemical cycles</p> <p>2.2.16 Explain the factors that influence biogeochemical cycles.</p> <p>3.2.17 Analyze the relationship between human activities and cycle sustainability</p> <p>4.2.18 Identify problems in biogeochemical cycles</p> <p>5.2.19 Develop predictions regarding the impact of changes in the water cycle</p> <p>6.2.20 Connect data and information regarding the concept of biogeochemical cycles</p> | <p>1.explains the concept of biogeochemical cycles and influencing factors</p> <p>2.Analyze the relationship between human activities and cycle sustainability</p> <p>3.Identifying problems in biogeochemical cycles</p> <p>4.Develop predictions regarding the impact of changes in the water cycle</p> <p>5.Connecting data and information regarding the concept of biogeochemical cycles</p> | <p>Criteria:</p> <p>1.4: correct description</p> <p>2.3: the description is generally correct, there is one aspect where the explanation is incorrect</p> <p>3.2: the description is generally correct, there is more than one aspect where the explanation is incorrect</p> <p>4.1: the description is wrong</p> <p>5.Mind map assessment refers to a rubric</p> <p>Form of Assessment : Participatory Activities</p> | <p>* Learning activities regarding the principles and concepts of biogeochemical cycles are carried out by utilizing articles about the chaotic phenomenon of the hydrological cycle as discussion material</p> <p>* Through these articles, students learn to analyze current problems and propose possible solutions</p> <p>* Students carry out activities with demanding LKM guidance students think critically and actively</p> <p>* Performance Assignments (products) are carried out by giving assignments to students to study literature on biogeochemical cycles, the results of which are realized in the form of a mind map</p> <p>* Students are asked to present the results of group discussions in front of the class</p> <p>3</p> | <p>* Learning is done using Gmeet or using Vinesa</p> <p>* The learning media used is a video about the phenomenon of climate change and its effects on humans</p> <p>1 x 90</p> | <p>Material: Biogeochemical cycles</p> <p>References: <i>Odum, EP 1998. Basics of Ecology. Yogyakarta: Gadjah Mada University Press.</i></p> <hr/> <p>Material: factors influencing biogeochemical cycles</p> <p>References: <i>Campbell, NA et al. (2008). Biology; Eighth Edition. San Francisco: Pearson, Benjamin Cummings.</i></p> | 8% |
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| 6 | <p>1.3.1 Explain the factors limiting an organism's tolerance</p> <p>2.3.2 Write down the physical and chemical factors that are limiting factors for organisms in the environment</p> <p>3.3.3 Identify problems that cause lots of fish floating in the water</p> <p>4.3.4 Develop predictions for the phenomenon of fish floating in the waters</p> <p>5.3.5 Link data and information regarding limiting factors</p> <p>6.3.6 Design a solution to prevent fish from floating in the water</p> | <p>1.Explain the factors limiting an organism's tolerance</p> <p>2.Write down the physical and chemical factors that are limiting factors for organisms in the environment</p> <p>3.Identify problems that cause lots of fish floating in the water</p> <p>4.Make predictions about the phenomenon of fish floating in the waters</p> <p>5.Linking data and information regarding limiting factors</p> <p>6.Design a solution to prevent fish from floating in the waters</p> | <p>Criteria:</p> <p>1.4: correct description</p> <p>2.3: the description is generally correct, there is one aspect where the explanation is incorrect</p> <p>3.2: the description is generally correct, there is more than one aspect where the explanation is incorrect</p> <p>4.1: the description is wrong</p> <p>Forms of Assessment :</p> <p>Participatory Activities, Project Results Assessment / Product Assessment</p> | <p>* Learning activities regarding limiting factors are carried out by utilizing articles about the phenomenon of many fish surfacing as discussion material</p> <p>* Through these articles, students learn to analyze problems and propose possible solutions</p> <p>* Students carry out activities guided by LKM which require students to think critically and active</p> <p>* Performance (product) assignments are carried out by giving assignments to students for literature study whose results are realized in the form of a mind map about limiting factors</p> <p>* Students are asked to present the results of group discussions in front of the class</p> <p>3</p> | <p>* Learning is done using Gmeet or using Vinesa</p> <p>* The learning media used is a video of lots of fish floating in the waters</p> <p>1 x 90</p> | <p>Material: limiting factors</p> <p>References:</p> <p><i>Odum, EP 1998. Basics of Ecology. Yogyakarta: Gadjah Mada University Press.</i></p> | 8% |
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| 7 | Identify community concept problems related to abundance, evenness and diversity of organisms in the form of problem formulation | 1.Communicate understanding of the concept of community 2.Explain the concept of community | 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, Practice/Performance | * Learning activities regarding communities are carried out by utilizing articles about Community phenomena as discussion material * Through these articles, students learn to analyze problems and propose possible solutions * Students carry out activities with LKM guidance that require students to think critically and actively * Performance Assignments (product) is carried out by giving assignments to students to study literature, the results of which are realized in the form of a mind map about the community * Students are asked to present the results of group discussions in front of the class 3 | 1 x 90 | Material: Material about the community References: <i>Campbell, NA et al. (2008). Biology; Eighth Edition. San Francisco: Pearson, Benjamin Cummings.</i> | 10% |
| 8 | UTS | Sub CPMK meetings 1 to 7 | Criteria: assessment refers to a rubric Form of Assessment : Test | Case Study 3 X 50 | 1 x 90 | Material: Ecology and its scope References: <i>Campbell, NA et al. (2008). Biology; Eighth Edition. San Francisco: Pearson, Benjamin Cummings.</i> Material: Community, biogeochemical cycles, productivity References: <i>Odum, EP 1998. Basics of Ecology. Yogyakarta: Gadjah Mada University Press.</i> | 0% |

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| 9 | Identifying problems related to the concepts of growth, interaction and population regulation in the form of problem formulation | Students can: Explain and analyze growth, interaction and regulation of populations 1. Explain the basic concept of population 2. Explain the characteristics of populations 3. Explain the basic concept of population rate 4. Explain population interactions 5. Do practical work on population distribution patterns 6. Write practical reports 7. Explain the carrying capacity of the environment | 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, Practical Assessment | Performance Assignments (products) Student-centered approach Student-centered learning Inductive learning strategy The methods used are discussions, practicums, literature searches (library and Google Scholar), working on LKM according to procedures that still require students to think critically and actively. 3 X 50 | | Material: Population regulation References: <i>Myers, Judith H. and Bazely Dawn R. 2003. Ecology and Control of Introduced Plants. The Edinburgh Building, Cambridge CB2 2RU, United Kingdom. Cambridge University Press.</i> Material: Population References: <i>Odum, EP 1998. Basics of Ecology. Yogyakarta: Gadjah Mada University Press.</i> | 10% |
| 10 | Identify problems related to species and habitat concepts | 1.1. Explain the concept of species and adapted species 2.2. Explain the concept of individual 3.3 Identify niches and habitats | 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 | Performance Assignments (products) Student-centered approach Student-centered learning Inductive learning strategy The methods used are discussions, practicums, literature searches (library and Google Scholar), working on LKM according to procedures that still require students to think critically and actively. 3 X 50 | 1 x 90 | Material: Species Reference: <i>Campbell, NA et al. (2008). Biology; Eighth Edition. San Francisco: Pearson, Benjamin Cummings.</i> Material: ecological niche Reference: <i>Odum, EP 1998. Basics of Ecology. Yogyakarta: Gadjah Mada University Press.</i> | 5% |
| 11 | Identifying problems related to ecoenergetics and ecosystem development | 1. Students can: Communicate an understanding of ecoenergy and ecosystem development, which consists of: 2.1. Explain the concept of energy flow, dispersion, aggregation 3.2. Explain isolation and territoriality 4.3. Explain group selection 5.4. Analyze the concept of climax 6.5. Analyze ecosystem development 7.6. Convey ideas/opinions regarding the flow of energy in the environment | 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 Forms of Assessment : Participatory Activities, Portfolio Assessment, Practical Assessment | Performance Assignments (products) Student-centered approach Student-centered learning Inductive learning strategy The methods used are discussions, practicums, literature searches (library and Google Scholar), working on LKM according to procedures that still require students to think critically and actively. 3 X 50 | 1 x 90 | Material: Ecoenergetics References: <i>Odum, EP 1998. Basics of Ecology. Yogyakarta: Gadjah Mada University Press.</i> Material: Climax ecosystem References: <i>Campbell, NA et al. (2008). Biology; Eighth Edition. San Francisco: Pearson, Benjamin Cummings.</i> | 5% |

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| 12 | Identifying problems with vegetation | <p>1.1. Identify biomes</p> <p>2.2. Explain the concept of the land environment</p> <p>3.3. Explain vegetation</p> <p>4.4. Identify the types of biomes</p> | <p>Criteria:</p> <p>1.4: correct description</p> <p>2.3: the description is generally correct, there is one aspect where the explanation is incorrect</p> <p>3.2: the description is generally correct, there is more than one aspect where the explanation is incorrect</p> <p>4.1: the description is wrong</p> <p>Form of Assessment : Participatory Activities, Practice/Performance</p> | <p>Performance Assignments (products)</p> <p>Student-centered approach</p> <p>Student-centered learning</p> <p>Inductive learning strategy</p> <p>The methods used are discussions, practicums, literature searches (library and Google Scholar), working on LKM according to procedures that still require students to think critically and actively.</p> <p>3 X 50</p> | 1 x 90 | <p>Material: Biomes</p> <p>References: <i>Myers, Judith H. and Bazely Dawn R. 2003. Ecology and Control of Introduced Plants. The Edinburgh Building, Cambridge CB2 2RU, United Kingdom. Cambridge University Press.</i></p> <hr/> <p>Material: Biomes and biome types</p> <p>References: <i>Odum, EP 1998. Basics of Ecology. Yogyakarta: Gadjah Mada University Press.</i></p> | 5% |
| 13 | Identifying the concept of natural resource conservation | <p>Students can: Analyze the history of conservation</p> <p>Explain the history of conservation</p> | <p>Criteria:</p> <p>1.4: correct description</p> <p>2.3: the description is generally correct, there is one aspect where the explanation is incorrect</p> <p>3.2: the description is generally correct, there is more than one aspect where the explanation is incorrect</p> <p>4.1: the description is wrong</p> <p>Form of Assessment : Participatory Activities</p> | <p>Case study</p> <p>3 X 50</p> | 1 x 90 | <p>Material: conservation</p> <p>Bibliography: <i>Spellerberg, Ian, F. Longman. 1998. Conservation Biology. Singapore Publishers Ltd.</i></p> <hr/> <p>Material: conservation</p> <p>Bibliography: <i>Odum, EP 1998. Basics of Ecology. Yogyakarta: Gadjah Mada University Press.</i></p> | 5% |
| 14 | Identify conservation problems of non-biological natural resources and biological natural resources | <p>Students can: Explain the development, conservation of natural resources and natural resources</p> | <p>Criteria:</p> <p>1.4: correct description</p> <p>2.3: the description is generally correct, there is one aspect where the explanation is incorrect</p> <p>3.2: the description is generally correct, there is more than one aspect where the explanation is incorrect</p> <p>4.1: the description is wrong</p> <p>Forms of Assessment : Participatory Activities, Project Results Assessment / Product Assessment, Practical Assessment</p> | <p>Performance Assignments (products)</p> <p>Student-centered approach</p> <p>Student-centered learning</p> <p>Inductive learning strategy</p> <p>The methods used are discussions, practicums, literature searches (library and Google Scholar), working on LKM according to procedures that still require students to think critically and actively.</p> <p>3 X 50</p> | 1 x 90 | <p>Material: SDAH conservation</p> <p>Reference: <i>Spellerberg, Ian, F. Longman. 1998. Conservation Biology. Singapore Publishers Ltd.</i></p> <hr/> <p>Material: plant conservation</p> <p>References: <i>Myers, Judith H. and Bazely Dawn R. 2003. Ecology and Control of Introduced Plants. The Edinburgh Building, Cambridge CB2 2RU, United Kingdom. Cambridge University Press.</i></p> | 5% |

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| 15 | Identify natural resource and natural resource conservation problems at global and local levels | Students can: Explain the differences between the fields of conservation biology, environmental science, ecology, and other related scientific variations, for example biological resource management and bioprocessing, as well as evaluate their success in real life field practice. Provide precise boundaries to differentiate ecology, environmental science and conservation biology, accompanied by concrete examples. Evaluate the success of conservation implementation actions, with ideal parameters agreed by scientific standards and reality. | <p>Criteria:</p> <p>1.4: correct description</p> <p>2.3: the description is generally correct, there is one aspect where the explanation is incorrect</p> <p>3.2: the description is generally correct, there is more than one aspect where the explanation is incorrect</p> <p>4.1: the description is wrong</p> <p>Form of Assessment : Participatory Activities, Practical Assessment</p> | Performance Assignments (products) Student-centered approach Student-centered learning Inductive learning strategy The methods used are discussions, practicums, literature searches (library and Google Scholar), working on LKM according to procedures that still require students to think critically and actively. 3 X 50 | 1 x 90 | <p>Material: Biology and its branches</p> <p>References: <i>Campbell, NA et al. (2008). Biology; Eighth Edition. San Francisco: Pearson, Benjamin Cummings.</i></p> <p>Material: Ecology and the science that supports it</p> <p>Reference: <i>Odum, EP 1998. Basics of Ecology. Yogyakarta: Gadjah Mada University Press.</i></p> | 10% |
| 16 | UAS | SubCPMK meeting 9-15 | <p>Criteria: assessment refers to a rubric</p> <p>Form of Assessment : Participatory Activities, Tests</p> | Case study 2 x 50 | | <p>Material: community</p> <p>Bibliography: <i>Campbell, NA et al. (2008). Biology; Eighth Edition. San Francisco: Pearson, Benjamin Cummings.</i></p> <p>Material: populations, species, ecoenergetics</p> <p>References: <i>Odum, EP 1998. Basics of Ecology. Yogyakarta: Gadjah Mada University Press.</i></p> <p>Material: SDAH conservation</p> <p>Reference: <i>Spellerberg, Ian, F. Longman. 1998. Conservation Biology. Singapore Publishers Ltd.</i></p> | 0% |

Evaluation Percentage Recap: Case Study

| No | Evaluation | Percentage |
|----|---|------------|
| 1. | Participatory Activities | 53.51% |
| 2. | Project Results Assessment / Product Assessment | 5.67% |
| 3. | Portfolio Assessment | 10.67% |
| 4. | Practical Assessment | 15.01% |
| 5. | Practice / Performance | 9.17% |
| 6. | Test | 5% |
| | | 99.03% |

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.