Course Module

Landscape Analysis

Faculty of Forestry

Mulawarman University

Module name	Landscape Analysis
Module level, if applicable	Graduates Programme
Code, if applicable	190401802P013
Subtitle, if applicable	
Courses, if applicable	Regular
Semester(s) in which the module is taught	II (two)
Person responsible for the module	Dr. Heru Herlambang, S.Hut., M.P.
Lecturer	Dr. Heru Herlambang, S.Hut., M.P. Kiswanto, S.Hut., M.P., Ph.D.
Language	Indonesia
Relation to curriculum	Programme, mandatory
Type of teaching, contact hours	Lecture, 2 lecture contact hours
Workload	Number of meetings per semester: 16 meetings (14 meetings for learning activity, 1 meeting for mid semester, 1 meeting for final examination) 2 x 50 minutes lectures, 2 x 60 minutes structured assignment, 2 x 60 minutes individual activity, with a total time of 4760 minutes or equivalent to a total of 79.3 hours in 14 weeks per semester
Credit points	2 SKS (3.18 ECTS) Details: 1 Credit = 170 min/week 1 Credit = 170 min x 14 week = 2,380 min/semester 1 ECTS = 25 h / semester 1 Credit = 2,380 / 60 / 25 = 1.59 ECTS 2 Credit = 1.59 x 2 = 3.18 ECTS
Requirements according to the examination regulations	Have attended not less than 80% class meetings
Recommended prerequisites	
Module objectives/intended learning outcomes	**Intended Learning Outcomes** **Knowledge and Understanding** **ILO-1 :** Applying scientific ethics, norms, and values of professionalism **Investigation**

	ILO-3 : Able to analyze current problems and issues, and assess the ecological, social, and economic impacts of implementing programs in the forestry and tropical environmental sectors. **Engineering Design and Practice** **ILO-4 :** Develop research schemes based on inter or multidisciplinary approaches to tropical forestry and the environment, and communicate the results to the public. **Social Competences** **ILO-5 :** Lead, work in a team, and be responsible for achieving group work results. **Course Learning Outcomes** **Knowledge and Understanding** **CLO-1 :** Students are able to understand and analyze ecological, social, and spatial concepts, components, and structures of regional landscapes. **Investigation** **CLO-2 :** Students are able to apply landscape analysis methods, including remote sensing, land use analysis, and participatory approaches, to support sustainable regional planning and management. **Engineering Design and Practice** **CLO-3:** Students are able to develop research schemes based on inter or multidisciplinary approaches to landscape analysis, and communicate the results to the public.
Content	This course discusses the concepts, principles, and techniques of landscape analysis to comprehensively understand the characteristics, functions, and dynamics of the area. Students will study various aspects of the landscape, including structure, ecological function, fragmentation, land use, and landscape change. In addition, the course also covers remote sensing methods, participatory approaches, as well as zoning planning and ecosystem-based area management. Through case studies and spatial analysis, students are expected to be able to apply knowledge in supporting climate change mitigation, disaster risk management, and sustainable landscape management. This course provides a basis for understanding the important role of landscapes in the ecological, social, and spatial contexts that support regional sustainability. After attending this course, students have the ability to: 1. Students understand the basic concepts of regional landscape analysis. **(CLO-1)** 2. Students are able to identify the components and structure of the regional landscape. **(CLO-1)** 3. Students are able to explain the ecological function of landscape. **(CLO-1)**

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<tr><td></td><td>4. Students are able to analyze changes and dynamics of regional landscape. (CLO-2)
5. Students are able to analyze landscape fragmentation and its implications. (CLO-2)
6. Students are able to perform landscape-based land use analysis. (CLO-2)
7. Students are able to utilize remote sensing data for landscape analysis. (CLO-2)
8. Students are able to calculate the diversity index and landscape ecosystem. (CLO-2)
9. Students are able to analyze the role of landscape in climate change mitigation. (CLO-2)
10. Students are able to analyze landscape-based disaster risk. (CLO-2)
11. Students are able to use a participatory approach in landscape analysis. (CLO-3)
12. Students are able to design area zoning based on landscape analysis. (CLO-3)
13. Students are able to develop ecosystem-based landscape management plans. (CLO-3)
14. Students are able to analyze case studies of landscape analysis implementation. (CLO-3)</td></tr>
<tr><td>Study and examination requirements and forms of examination</td><td>Evaluation and assessment of the learning process are following scheme 5 in the Academic Regulations of Mulawarman University:
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Assignment/Case study</td><td>Group presentation</td><td>25</td></tr>
<tr><td>3</td><td>Project</td><td>Presentation</td><td>25</td></tr>
<tr><td>4</td><td>Mid-semester test</td><td>Written test</td><td>15</td></tr>
<tr><td>5</td><td>Final semester test</td><td>Written test</td><td>25</td></tr>
<tr><td colspan="3">TOTAL</td><td>100</td></tr>
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<tr><td>Media employed</td><td>Laptop, LCD</td></tr>
<tr><td>Reading list</td><td></td></tr>
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1. Turner, M. G., & Gardner, R. H. (2023). *Landscape Ecology in Theory and Practice: Pattern and Process* (3rd ed.). Springer.
2. Forman, R. T. T. (2023). *Land Mosaics: The Ecology of Landscapes and Regions*. Cambridge University Press.
3. Wu, J., & Hobbs, R. J. (2023). *Key Topics in Landscape Ecology: Perspectives and Challenges*. Wiley-Blackwell.
4. Liu, Y., et al. (2024). "Spatiotemporal Dynamics of Landscape Change and Its Ecological Impact." *Journal of Environmental Management, 341*, 117854.
5. Haddad, N. M., et al. (2023). "The Effects of Habitat Fragmentation on Biodiversity: A Global Perspective." *Science Advances, 9*(4), eabq2923.
6. Li, Z., et al. (2024). "Land Use and Cover Change: Implications for Sustainable Development Goals." *Environmental Research Letters, 19*(1), 015001.
7. Huang, C., et al. (2023). "Advances in Remote Sensing for Landscape Analysis." *International Journal of Remote Sensing, 44*(2), 223-241.
8. Magurran, A. E., & McGill, B. J. (2024). *Biological Diversity: Frontiers in Measurement and Assessment* (2nd ed.). Oxford University Press.
9. Griscom, B. W., et al. (2023). "Natural Climate Solutions for Mitigation and Resilience." *Nature Climate Change, 13*(7), 634-647.
10. Cutter, S. L., et al. (2024). "Landscape Vulnerability and Risk Assessment for Natural Hazards." *Progress in Disaster Science, 15*, 100213.
11. Reed, M. S., et al. (2023). "Participatory Landscape Planning: A Guide for Practice." *Ecology and Society, 28*(3), 45.
12. Geneletti, D., et al. (2024). *Spatial Planning and Sustainable Development: Approaches for Urban and Regional Sustainability*. Springer.
13. Sayer, J., & Maginnis, S. (2023). *Ecosystem-Based Management for Landscapes: Tools and Strategies*. IUCN.
14. Opdam, P., et al. (2023). "Integrating Science and Practice in Landscape Sustainability Case Studies." *Landscape and Urban Planning, 238*, 104391.