

Ecological Hydroengineering

2 units (selection)

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Target Methods for conserving and improving riparian and coastal ecosystems in an actual way are developed, both from hydraulic and ecological perspectives.

Outline Hydrodynamics of open-channel flow and wave in river, estuary. Mechanics of sediment transport by open-channel flow and wave. Theoretical and numerical analysis of hydro-geomorphic process. Influence of physical condition on ecological system. Interactive dynamics between hydro-geomorphic process and plant communities. Ecological assessment and restoration of riparian ecosystems. Landscape management in an ecological way.

Style Lecture in combination with Portfolio, Portfolio

Keyword *ecosystem, river, estuary, watershed, landscape management*

Fundamental Lecture “Advanced Environmental Ecology”(1.0), “Advanced Disaster Reduction Engineering”(1.0)

Relational Lecture “Advanced mitigation engineering”(0.5), “Watershed Hydrologic Engineering”(0.5)

Requirement not specified

Notice not specified

Goal

1. Students understand mechanism and analysis technique for flow and sediment transport in the middle and upper reaches of a river.
2. Students understand analysis technique for flow and material transport in estuary, and are able to evaluate correctly the relation between physical phenomena and estuarine ecosystem.
3. Students have knowledge to evaluate ecosystem value, and are able to apply for ecosystem improvement.

Schedule

1. Governing equation of hydro-geomorphic process
2. Numerical analysis of hydro-geomorphic process
3. Statistical analysis of hydro-geomorphic process
4. Interaction between hydro-geomorphic process and vegetation, report(1)
5. Flow analysis in estuary

6. Flow analysis in coastal zone

7. Wave analysis in coastal zone

8. Evaluation model of ecosystem in coastal zone, report(2)

9. Finding the limiting factors of ecosystem distribution

10. Mechanism for sustaining ecosystems

11. Pattern and process of ecosystem change

12. Mechanism of ecosystem alteration in relation to human activities

13. Ecological management of landscape and landscape ecology 1

14. Ecological management of landscape and landscape ecology 2

15. Ecological engineering for ecosystem management, report(3)

Evaluation Criteria marks of report (1) , (2) and (3) are summed with the weights of 3 ,3 and 4, respectively, and the passing mark is 60%.

Textbook To be introduced in the class.

Reference To be introduced in the class.

Contents <http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216885>

Student Able to be taken by only specified class(es)

Contact

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