

Applied Fluid Dynamics

2 units (selection)

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Target) This subject is concerned with flood flow, sediment transport and riverbed variation. The aim of this subject is to understand fundamentals of those phenomena, as well as of various solution methods for river designing and management.

Outline) Firstly, characteristics of flood flow and riverbed variation are interpreted and the basic equations of those phenomena are deduced and presented. Secondly, turbulence characteristics of the river flow and sediment transport mechanism are lectured in detail. Then solution methods toward various problems on river designing and management are introduced, in relation to how the fundamental knowledge is applied to the solution.

Style) Lecture

Keyword) *flood flow, turbulent flow, sediment transport, riverbed variation, river designing*

Relational Lecture) “[Advanced Disaster Reduction Engineering](#)”(0.7), “[Advanced Water Circulation Engineering](#)”(0.7)

Requirement) Fundamental knowledge of hydraulics and river engineering is necessary.

Notice) not specified.

Goal) fundamentals of flood flow, sediment transport and riverbed variation are understood, and idea and basic application methods of such fundamentals toward practical problems are mastered.

Schedule)

1. guidance (problems on river designing and management)
2. basic equations of river flow
3. turbulence structure of river flow (1)
4. turbulence structure of river flow (2)
5. experimental methods (1)
6. sediment transport mechanism
7. formulas of sediment transport
8. riverbed variation
9. experimental methods (2)
10. numerical models for river flow

11. numerical models for riverbed variation

12. observational methods

13. examples of river designing (1)

14. examples of river designing (2)

15. self-forming process of channel and regime theorem

Evaluation Criteria) Reports

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=216579>

Student) only for specified course

Contact)

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