

Subject: Flood Hydraulics and River Channel Design

Course number : DMP3810E

Instructor : Prof. Shoji FUKUOKA

Term / Time : Fall through Winter

1 Course Description

This course provides the basic knowledge necessary for planning and designing the structural measures for Integrated Flood Risk Management (IFRM). The course first describes the river administration and planning for application of IFRM. Especially the methodology of comprehensive river management will be emphasized that includes planning of flood hydraulics, flood controls, river structures and sediment movement to river channels . This will be followed by specific technologies of channel control and channel improvement.

2. Course Outline (Course Topics)

Week

1. Characteristics and management of Japanese rivers.
2. Characteristics of flood flows.
3. Hydrograph propagation of water level and discharge in flood flows.
4. Flow resistance in rivers with compound channels.
5. Prediction method of flow resistance in compound channels.
6. Effects of channel vegetations on flood propagation.
7. Quasi-two-dimensional analysis of flood flows in rivers with vegetations.
8. Relationship between dimensionless width, depth and discharge in rivers
- Learning from natural rivers
9. Channel design harmonizing the flood control and river environment.
10. Flood flow behavior in dam reservoirs.
11. Flows and bed variations in channels -Ishikari River case
12. In-river diversion channel design from viewpoints of flow and bed variation.
13. Design method of Watarase retarding basin in Tone river system
14. Design method of Consolidation Work in the Shinano River
15. Summary of "Flood Hydraulics and River Channel Design "

3 Grading

Reports (25%) Final examination (75 %)

4 Textbooks

Lecture notes will be distributed to students in the class.