Subject: Hydraulics

Course number：DMP281E
Instructor：Prof. Tadaharu ISHIKAWA
Term / Time：Fall through Winter

1 Course Description

Open Channel Hydraulics is a branch of applied fluid mechanics to support river management and improvement works for flood disaster prevention and water environment conservation. The first half of the lecture provides the fundamentals; general transport equation being based on the idea of conservation law, and basic characteristic of one dimensional open channel flow by using the energy transport equation. The second half of the lecture provides practical features of open channel hydraulics; hydraulic jump, composite channel flow, secondary flow, and salt wedge dynamics in estuaries.

2 Course Outline (Course Topics)

Week

1 ：Balance equation
2 ：Differential form of balance equation
3 ：Transport equation
4 ：Diffusion
5 ：Quiz-1
6 ：One dimensional energy equation
7 ：Specific Energy
8 ：Gradually varied flow
9 ：Quiz-2
10 ：Specific force
11 ：Hydraulic jump, Junction and Diversion
12 ：Composite channel flow
13 ：Secondary flow
14 ：Density currents
15 ：Term examination

3 Grading

Class participation (30%), Quiz (30%), Examination (40%)

4 Textbooks

4-1 Required
4-2 Others