

## **Subject: Basic Practice on Flood Forecasting & Inundation Analysis**

Course number : DMP2890E

Instructor : Assoc. Prof. Takahiro SAYAMA

Term / Time : Fall through Spring

### 1 Course Description

The objective of this course is to introduce the basic technique for undertaking flood forecasting and inundation analysis in poorly-gauged basins using state-of-the-art global information and technologies. The course consists of five components: practice on the basic of Geographic Information System (GIS), introduction of Rainfall-Runoff-Inundation (RRI) modeling, practice on Integrated Flood Analysis System (IFAS) and Block-wise use of TOPMODEL (BTOP) for runoff analysis, followed by Remote Sensing (RS) for inundation mapping.

### 2 Course Outline (Course Topics)

Week

- 1 : Geographic Information System (GIS) (1) Basic concept
- 2 : Geographic Information System (GIS) (2) Working with ArcGIS
- 3 : Geographic Information System (GIS) (3) ArcGIS surface analysis
- 4 : Geographic Information System (GIS) (4) ArcGIS hydrology analysis
- 5 : Rainfall-runoff-inundation modeling (1) Basic Concept
- 6 : Rainfall-runoff-inundation modeling (2) Model run with tutorial data
- 7 : Rainfall-runoff-inundation modeling (3) Topographic data preparation
- 8 : Rainfall-runoff-inundation modeling (4) Parameter setting
- 9 : Runoff analysis with IFAS (1) Data import, Model building
- 1 0 : Runoff analysis with IFAS (2) Parameter estimation
- 1 1 : Runoff analysis with IFAS (3) Validation of calculated discharge
- 1 2 : Large-scale Runoff analysis with BTOP (1) Basic concept
- 1 3 : Large-scale Runoff analysis with BTOP (2) Data preparation
- 1 4 : Large-scale Runoff analysis with BTOP (3) Running model
- 1 5 : Remote Sensing for Inundation Mapping (RS) Basic concept & case study

### 3 Grading

Reports (100%)

If a report is late for the deadline, it will be not evaluated.

### 4 Textbooks

4-1 Required

4-2 Others

Material made by the instructors