Akashi College	Year	2023	Course Title	Hydraulic Engineering I

Course Information

Course Code	5029	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Architecture and Civil Engineering	Student Grade	Adv. 2nd
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials			
Instructor	WATANABE Moriyoshi		

Course Objectives

1. Acquire the ability to perform runoff analysis using hydrological data.
2. Acquire the ability to consider and explain the mechanism of flood disaster and its countermeasures from multiple perspectives.
3. Acquire the ability to explain the necessity of water resource development, environmental impact and countermeasures.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can perform runoff analysis using hydrological data.	Can explain runoff analysis using hydrological data.	Cannot explain runoff analysis using hydrological data.
Achievement 2	Can explain the mechanism of flood disaster and its countermeasures from multiple perspectives.	Can explain the mechanism of flood disaster and its countermeasures.	Cannot explain the mechanism of flood disaster and its countermeasures from multiple perspectives.
Achievement 3	Can explain the necessity of water resource development, environmental impact and countermeasures.	Can explain the necessity of water resource development.	Cannot explain the necessity of water resource development, environmental impact and countermeasures.

Assigned Department Objectives

Teaching Method

Outline	Students will learn about the protection and development in the especially flooding and inundation in river basin.
Style	Classes are based on lectures, and group work, experiments, and exercises are also conducted.
Notice	This course's content will amount to 90 hours of study in total. These hours include the learning time guaranteed in classes and the standard self-study time required for pre-study / review, and completing assignment reports. The course is open to students from any department. Classes will be taught as simply as possible, but students should prepare textbooks. Basic knowledge of hydraulics, sanitary engineering and environmental engineering will be explained in the lecture as much as possible. Students who miss 1/3 or more of classes will not be eligible for evaluation.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Hydraulic System Guidance	Can explain various problems occurring at aquatic area.
		2nd	River flood control	Can explain outline of flood disaster and flood control in river.
		3rd	Water cycle and hydrological data	Can explain the water cycle in the basin and calculate the occurrence probability from hydrological data
		4th	Run off analysis	Can explain runoff analysis in the basin.
		5th	Experiment of flooding	Can explain the mechanism of external and inland flooding.
		6th	Experiment of flood and inundation	Can explain the mechanism of external and inland flooding.
		7th	Drainage system in urban	Can explain outline of water cycle in the urban, and countermeasure to inundation.
		8th	Basin flood control	Can explain outline of river basin flood control, and countermeasure to the flooding.
	2nd Quarter	9th	Group work about flood and inundation 1	Can collect materials and information related to issues and propose ideas to achieve objectives.
		10th	Group work about flood and inundation 2	Can crate shape to ideas to achieve the purpose of the assignment.
		11th	Group work about flood and inundation 3	Can crate shape to ideas to achieve the purpose of the assignment.
		12th	Group work about flood and inundation 4	Can crate shape to ideas to achieve the purpose of the assignment.
		13th	Group work about flood and inundation 5	Can make presentations using ideas proposed in groups and understand and consider flood disaster.
		14th	Water cycle and water resources	Can explain water cycle in the river basins, watar resources in Japan, and water resource development.

		15th	Environmental impact of water resource development	Can explain the functions and roles of dams, their impact on the environment, and countermeasures.
		16th	Periodic exam	

Evaluation Method and Weight (%)

	Examination	Groupwork	Periodic exam	Total
Subtotal	30	50	20	100
Basic Proficiency	0	0	0	0
Specialized Proficiency	30	50	20	100
Cross Area Proficiency	0	0	0	0