

Akashi College		Year	2022		Course Title	Environmental Ecology
Course Information						
Course Code	4320			Course Category	Specialized / Compulsory	
Class Format	Lecture			Credits	Academic Credit: 2	
Department	Civil Engineering			Student Grade	3rd	
Term	First Semester			Classes per Week	2	
Textbook and/or Teaching Materials						
Instructor	WATANABE Moriyoshi					
Course Objectives						
(1) Can explain the global environmental issues and the connection between human health and environment. (2) Can explain the structure and functions of ecosystems, the relationship between material circulation and microorganisms, and the characteristics of various ecosystems and their conservation methods. (3) Can explain the current state of biodiversity and the crisis it is facing. (4) Can explain measures to protect the natural ecosystem.						
Rubric						
	Ideal Level		Standard Level		Unacceptable Level	
Achievement 1	Can explain the global environmental issues and the connection between human health and environment using examples of pollution cases that occurred in the past.		Can explain the global environmental issues and the connection between human health and environment.		Cannot explain the global environmental issues and the connection between human health and environment.	
Achievement 2	Can explain the structure and functions of ecosystems, the relationship between material circulation and microorganisms, the characteristics of various ecosystems and their conservation methods, and can solve exercise problems.		Can explain the structure and function of ecosystems, the relationship between material circulation and microorganisms, and the characteristics of various ecosystems and their conservation methods.		Cannot explain the structure and function of ecosystems, the relationship between material circulation and microorganisms, and the characteristics of various ecosystems and their conservation methods.	
Achievement 3	Can explain the current state of biodiversity and the crisis it is facing, and can solve exercise problems.		Can explain the current state of biodiversity and the crisis it is facing.		Cannot explain the current state of biodiversity and the crisis it is facing.	
Achievement 4	Can explain measures to protect the natural ecosystem with examples.		Can explain measures to protect the natural ecosystem.		Cannot explain measures to protect the natural ecosystem.	
Assigned Department Objectives						
Teaching Method						
Outline	In this course, students will learn about ecology, and the connection between living creatures and the environment. They will gain basic knowledge that can be applied to town-building where creatures live together, and to the planning, designing, and building of social infrastructures, etc.					
Style	Classes are conducted in a lecture format. Prepare calculators for calculation problems.					
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 exercise problems. Students who miss 1/3 or more of classes will not be eligible for a passing grade.					
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	Guidance, pollution and human health		Can explain the connection between human health and environment, history and details of pollution cases that occurred in the past.	
		2nd	Global environmental issues		Can explain global environmental issues.	
		3rd	The basics of environmental ecology (1)		Can explain the concepts, types and distributions, and functions of ecosystems.	
		4th	The basics of environmental ecology (2)		Can explain individual organism and population, and the growth of population ecology.	
		5th	The basics of environmental ecology (3)		Can explain a biological community.	
		6th	The structure of the ecosystem, its connections and the flow of energy		Can explain the structure and energy of the ecosystem.	
		7th	Material circulation in the ecosystem		Can explain material circulation in the ecosystem.	
		8th	Midterm exam		Confirmation of understanding level the 1st to 7th week.	
	2nd Quarter	9th	Biodiversity and its crisis		Can explain the current state of biodiversity and the crisis it is facing. Can calculate diversity index of species.	
		10th	Biotope and conservation methods of ecosystem		Can explain the role and definition of biotope, and conservation methods of ecosystem.	

		11th	The functions and role of forest ecosystems	Can explain the current state, conservation methods, functions and roles of forest ecosystems.
		12th	Agricultural ecosystems and urban ecosystems	Can explain the current state, conservation methods, functions and roles of agricultural ecosystems and urban ecosystems.
		13th	Aquatic ecosystems and water environment (1)	Can explain the current state, conservation methods, functions and roles of aquatic ecosystems (lake and reservoir).
		14th	Aquatic ecosystems and water environment (2)	Can explain the current state, conservation methods, functions and roles of aquatic ecosystems (waterway).
		15th	Legal system for protecting ecosystems	Can explain the legal system and measures to protect ecosystems.
		16th	Final exam	

Evaluation Method and Weight (%)

	Exams	Exercise Problems	Total
Subtotal	70	30	100
Basic Proficiency	0	0	0
Specialized Proficiency	70	30	100
Cross-Disciplinary Proficiency	0	0	0