Tsuyama College	Year	2021	Course Title	Biology

Course Information

Course Code	0003	Course Category	General / Compulsory
Class Format	Lecture	Credits	School Credit: 2
Department	Department of Integrated Science and Technology Communication and Informations System Program	Student Grade	1st
Term	Year-round	Classes per Week	2
Textbook and/or Teaching Materials	Textbooks: Ministry of Education, Culture, Sports, Science and Technology authorized textbook "Revised Biology Basics" (Tokyo Shoseki), Reference books : Bilology Square (Daiichi Gakushusha)		
Instructor	SHIBATA Norito		

Course Objectives

Course Objectives :
1. Understand the commonality and diversity of living things on the earth
2. Explain the properties of DNA as genetic information common to all living things
3. Understand the regulatory mechanisms of the internal environment of living things
4. Explain the ecosystem of the earth

Rubric

	Excellent	Good	Acceptable	Not acceptable
Achievement 1	Understand the commonality and diversity of living things, and explain with concrete examples	Understand and explain the commonality and diversity of living things.	Understand the commonality and diversity of living things.	Do not understand the commonality and diversity of living things.
Achievement 2	Understand the properties of DNA, and explain the mechanism and advantages of DNA as genetic information.	Understand the properties of DNA and explain how DNA works as genetic information	Explain the properties of DNA that are common to all living things.	Do not explain the properties of DNA that are common to all living things.
Achievement 3	Understand the regulatory mechanism of the internal environment, and explain several specific examples of the mechanisms of homeostasis in the body.	Understand the regulatory mechanisms of the internal environment, and explain the homeostasis maintenance	Explain the regulatory mechanism of the internal environment.	Do not explain the regulatory mechanism of the internal environment..
Achievement 4	Explain the ecosystem on the earth, and specific maintenance methods can be considered.	Explain the ecosystems on the earth, and learn how to conserve them.	Explain the ecosystem on the earth.	Do not explain the ecosystem on the earth.

Assigned Department Objectives

Teaching Method

Outline	General or Specialized : General Field of learning : Organisms Biology Foundational academic disciplines : Biology/Basic Biology Relationship with Educational Objectives : This class is equivalent to (2) "Acquire basic science and technical knowledge Relationship with Educational Objectives : The main goals of learning / education in this class is "(A)", and "A-1". Course outline : The development of molecular biology and biotechnology has made it possible to understand biological phenomena at the molecular and cellular levels. In addition, the ecosystem of the earth is affected by our human activities. Biology has become an area where basic background is required not only in the field of science but also in a wide range of fields such as engineering, medicine, and agriculture. In this class, we will explain the basics of biology.
Style	Course method : We will explain the main points using figures and tables. By conducting exercises that match the content of the lesson appropriately, review and self-study are encouraged. Grade evaluation method : The scores of each of the four regular exams are evaluated equally (70%), and the quizzes and reports up to each regular exam are added (30%). As a general rule, the first semester grades are the average of interim and final exam, and the grade grades are the average of all the results. Textbooks and notebooks are not allowed for the exam.
Notice	Precautions on the enrollment : Students must take this class (no more than one-third of the required number of class hours missed) in order to complete the 1st year course. Course advice : Instead of memorizing the words of living things, we recomend that you understand the mechanism of life phenomena. Foundational subjects : Science up to junior high school Related subjects : General Biology (2nd year), Applied Biology(4th) Attendance advice : Strictly adhere to the deadline for report assignments. If you are late for class, you will be considered absent after half the class time. If you have any questions about the lecture or related topics, we encourage you to ask for your deep understanding.

Characteristics of Class / Division in Learning

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

Must complete subjects

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance, Biological Diversity and Commonality (textbook p.12-23)	Explain the diversity of life on the earth. Explain the relationship between the commonality of organisms and evolution. Explain the common properties of organisms.
		2nd	Organisms and genes, Structure of DNA (textbook p.52-59)	Explain the structure of DNA in conjunction with genetic information.
		3rd	Explain the structure of DNA in conjunction with genetic information.	Understanding the chemical property of DNA by extracting DNA from plant
		4th	Genomes and Genetic Information (Textbook p. 60-63)	Explain the relationship between genomes and genes.
		5th	Genetic information and protein synthesis (textbook p. 72-85)	Explain the relationship between genetic information and proteins.
		6th	Genetic information and protein synthesis (textbook p. 72-85)	Explain the relationship between genetic information and proteins.
		7th	Genetic information and protein synthesis (textbook p. 72-85)	Genetic information and protein synthesis (textbook p. 72-85)
		8th	(First semester midterm exam)	
	2nd Quarter	9th	Return of answers and explanations for the first semester midterm exam	
		10th	Cell Cycle and DNA Replication (Textbook p. 64-71)	Explain the structure of chromosomes and the distribution of genome.
		11th	Cell Cycle and DNA Replication (Textbook p. 64-71)	Explain the cell cycle.
		12th	Life Activity and Energy (Textbook p. 26-39)	Understand the words, metabolism, catabolism, and anabolism, and explain the role of ATP as the currency of energy for life activities. Also, explain what an enzyme is and its role in metabolism.
		13th	Life Activity and Energy (Textbook p. 26-39)	Explain the general processes of photosynthesis and respiration, and also explain the relationship between the two processes.
		14th	Life Activity and Energy (Textbook p. 26-39)	Explain the theory of chloroplast and mitochondrial evolution.
		15th	(First semester final exam)	
		16th	Return of answers and explanations for the first semester final exam	
2nd Semester	3rd Quarter	1st	Return of answers and explanations for the first semester final exam	Explain the mechanism of homeostasis in the body through feedback regulation.
		2nd	The heart and blood circulation (Textbook p. 100-105)	Expain blood circulation by the heart.
		3rd	Organs regulating the body's internal environment (Textbook p. 108-115)	Explain the function of liver and kidney.
		4th	Regulation by the autonomic nervous system, Regulation by the endocrine system (textbook p.116-133)	Explain the function of neuro transmitters and their receptors.
		5th	Regulation by the autonomic nervous system, Regulation by the endocrine system (textbook p.116-133)	Regulation by the autonomic nervous system, Regulation by the endocrine system (textbook p.116-133)
		6th	Immunity (textbook p. 134-157)	Explain how the immune system protects the body.
		7th	Immunity (textbook p. 134-157)	Explain how the immune system protects the body.
		8th	(Second semester midterm exam)	
	4th Quarter	9th	Return of answers and explanations for the second semester midterm exam	
		10th	Vegetation diversity and transition (textbook p. 172-183)	Explain the transition of vegetation.
		11th	Vegetation diversity and transition (textbook p. 172-183)	Explain the transition of vegetation.
		12th	Climate and Biome (textbook p. 184-197)	Explain the global biome and its distribution. Explain the decline of tropical forests and the loss of biodiversity.
		13th	Climate and Biome (textbook p. 184-197)	Explain the horizontal and vertical distribution of the Japanese biome.
		14th	Ecosystems and their conservation (textbook p.198-223)	Explain the components of an ecosystem (producers, consumers, decomposers, and the nonliving environment) and their relationships. Explain the ecological pyramid. Explain the carbon cycle and energy flow in ecosystems. Explain the bioaccumulation of toxic substances. Explain the problems of global warming, its causes, and countermeasures.
		15th	(Second semester last exam)	

		16th	Return of answers and explanations for the second semester last exam	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	70	0	0	0	0	30	100
Basic Proficiency	70	0	0	0	0	30	100
Specialized Proficiency	0	0	0	0	0	0	0
Cross Area Proficiency	0	0	0	0	0	0	0