Akashi College	Year	2024	Course Title	Applied Physics A

Course Information

Course Code	6418	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	School Credit: 1
Department	Architecture	Student Grade	4th
Term	First Semester	Classes per Week	2
Textbook and/or Teaching Materials			
Instructor	OGASAWARA Hiromichi		

Course Objectives

1. Understand the description of motion of an object and the fundamental laws of mechanics.
2. Understand the basics of how to handle point masses in general based on the fundamental laws of mechanics.
3. Understand the basics of how to handle rigid body based on the fundamental laws of mechanics.
4. Understand the basics of thermodynamics.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can explain the description of the motion of an object and the fundamental laws of mechanics correctly and apply them to specific problems accurately.	Can explain the description of the motion of an object and the fundamental laws of mechanics and apply them to specific problems.	Cannot explain the description of the motion of an object and the fundamental laws of mechanics or apply them to specific problems.
Achievement 2	Can explain the basics of how to handle point masses based on the fundamental laws of mechanics correctly and apply them to specific problems accurately.	Can explain the basics of how to handle point masses based on the fundamental laws of mechanics and apply them to specific problems.	Cannot explain the basics of how to handle point masses based on the fundamental laws of mechanics or apply them to specific problems.
Achievement 3	Can explain the basics of how to handle rigid body based on the fundamental laws of mechanics correctly and apply them to specific problems accurately.	Can explain the basics of how to handle rigid body based on the fundamental laws of mechanics and apply them to specific problems.	Cannot explain the basics of how to handle rigid body based on the fundamental laws of mechanics or apply them to specific problems.
Achievement 4	Can explain the basic concepts of thermodynamics correctly and apply them to specific problems accurately.	Can explain the basic concepts of thermodynamics and apply them to specific problems.	Cannot explain the basic concepts of thermodynamics or apply them to specific problems.

Assigned Department Objectives

Teaching Method

Outline	Mechanics and the first steps in thermodynamics will be taught, including the necessary mathematical techniques (calculus and vector calculation). Mechanics is continued from Science III A-2.
Style	Classes will be taught in a lecture style, and there will also be practice and quizzes.
Notice	Instead of learning each knowledge (the result of applying the law to a particular situation, how to solve the problem) by memorizing it individually, students should understand the laws that govern them (including being able to apply them to specific situations). To do it, if necessary, review the content learned during the previous years. Also, students should be aware of the relationships between the various laws and try to understand concepts in physics systematically. The schedule of the midterm exam may be changed. Students who miss 1/3 or more of classes will not be eligible for a passing 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	Motion and force, and mechanical energy	Learn how to handle motion of objects in planes and spaces.
		2nd	Motion and force, and mechanical energy	Learn about the laws of motion.
		3rd	Motion and force, and mechanical energy	Learn about work and kinetic energy.
		4th	Motion and force, and mechanical energy	Learn about mechanical energy.
		5th	Law on momentum and angular momentum	Learn about the laws of momentum.
		6th	Law on momentum and angular momentum	Learn about the laws of angular momentum.
		7th	Law on momentum and angular momentum	Learn about the laws of angular momentum in the system of particles.
		8th	Midterm exam	
	2nd Quarter	9th	Mechanics of rigid bodies	Learn how to handle rigid bodies with a fixed axis.
		10th	Mechanics of rigid bodies	Learn about the moment of inertia.
		11th	Mechanics of rigid bodies	Learn how to handle rigid bodies without fixed axes.
		12th	Mechanics of rigid bodies	Learn the basics of momentum, angular momentum, and energy in the mechanics of rigid bodies.
		13th	Basics in thermodynamics	Learn the basics of thermodynamics.
		14th	Basics in thermodynamics	Learn how to handle the Carnot cycle.

		15th	Basics in thermodynamics	Learn about the irreversible change.
		16th	Final exam	

Evaluation Method and Weight (%)

	Examinations	Practice / Quizzes	Attendance / Behavior	Total
Subtotal	40	30	30	100
Basic Proficiency	40	30	30	100
Specialized Proficiency	0	0	0	0
Cross Area Proficiency	0	0	0	0