

Akashi College		Year	2024	Course Title	Structural Analysis I
Course Information					
Course Code	6229		Course Category	Specialized / Compulsory	
Class Format	Lecture		Credits	Academic Credit: 2	
Department	Architecture		Student Grade	2nd	
Term	Second Semester		Classes per Week	2	
Textbook and/or Teaching Materials					
Instructor	SHOJO Naoya				
Course Objectives					
(1)To understand the definition and units of force, to understand and calculate force synthesis/decomposition. (2)To understand and calculate the balance of force. (3)To understand the stability and instability of a structure. (4)To explain the type of load acting on a frame structure. (5) To calculate the reaction force of various static structures. (6)To calculate the stress of a static beam and draw a stress diagram. (7)To calculate the stress of a static frame structure and draw a stress diagram.					
Rubric					
	Excellent		Good		Insufficient
Achievement 1	The student can perfectly understands the definition and units of force, and calculate force synthesis/decomposition.		The student can understands the definition and units of force, and calculate force synthesis/decomposition.		The student can not understands the definition and units of force, and calculate force synthesis/decomposition.
Achievement 2	The student can well understand and calculate the balance of force.		The student can understand and calculate the balance of force.		The student can not understand and calculate the balance of force.
Achievement 3	The student well understands the stability and instability of a structure.		The student understands the stability and instability of a structure.		The student doesn't understand the stability and instability of a structure.
Achievement 4	The student can well explain the type of load acting on a frame structure.		The student can explain the type of load acting on a frame structure.		The student can not explain the type of load acting on a frame structure.
Achievement 5	The student can well calculate the reaction force of various static structures.		The student can calculate the reaction force of various static structures.		The student can not calculate the reaction force of various static structures.
Achievement 6	The student can well calculate the stress of a static beam and draw a stress diagram.		The student can calculate the stress of a static beam and draw a stress diagram.		The student can not calculate the stress of a static beam and draw a stress diagram.
Achievement 7	The student can well calculate the stress of a static frame structure and draw a stress diagram.		The student can calculate the stress of a static frame structure and draw a stress diagram.		The student can not calculate the stress of a static frame structure and draw a stress diagram.
Assigned Department Objectives					
Teaching Method					
Outline	The study of structural mechanics is essential because it is the base to understand architectural structures and structural design. In this course, the students acquire the fundamental knowledge of structural mechanics and the stress of a static structure.				
Style	The classes are on the lecture-style lecture, exercises and assignment will be executed as appropriate.				
Notice	This course requires 90 hours of self-study time to do preliminary reviews, reviews, and assignments. Students attendance is required, and only a maximum of 5 absences is excused.				
Characteristics of Class / Division in Learning					
<input checked="" type="checkbox"/> Active Learning		<input type="checkbox"/> Aided by ICT		<input checked="" type="checkbox"/> Applicable to Remote Class	
				<input type="checkbox"/> Instructor Professionally Experienced	
Course Plan					
			Theme	Goals	
2nd Semester r	3rd Quarter	1st	Force (1): Outline of structural mechanics, display of force and moment	To understand the definition and units of force, to understand and calculate force synthesis/decomposition.	
		2nd	Force (2): Synthesis and decomposition of forces, balancing of forces	To understand the definition and units of force, to understand and calculate force synthesis/decomposition. To understand and calculate the balance of force.	
		3rd	Architectural Structure (1): The composition of building structures, fulcrum, and node.	To explain the type of load acting on a frame structure.	
		4th	Architectural Structure (2): Stability / instability, reaction force.	To understand the stability and instability of a structure.To calculate the reaction force of various structures.	
		5th	The stress of a Structure (1): Concept and how to calculate it.	To calculate the stress of a static beam and draw a stress diagram.	
		6th	The stress of a Structure (2): Relationship between load, bending moment and shearing force	To calculate the stress of a static beam and draw a stress diagram.	

		7th	The stress of a Structure (3): How to calculate the stress	To calculate the stress of a static beam and draw a stress diagram.
		8th	Mid-term Exam	
	4th Quarter	9th	Static Beams (1): Outline of Static Beams, Solving to Cantilever Beams	To calculate the stress of a static beam and draw a stress diagram.
		10th	Static Beams (2): Solving simple beams	To calculate the stress of a static beam and draw a stress diagram.
		11th	Static Beams(3): Solving Gerber Beams	To calculate the stress of a static beam and draw a stress diagram.
		12th	Assignment 3-4: To aggregate the survey data and produce graphs using Microsoft Excel (4)	To understand how to use essential functions with spreadsheet software.
		13th	Static Rigid Frame (1): Outline of Static Rigid Frame and Solving Cantilevered Rigid Frames	To calculate the stress of a static frame structure and draw a stress diagram.
		14th	Static Rigid Frame (2): Solving a simple Frame	To calculate the stress of a static frame structure and draw a stress diagram.
		15th	Static Rigid Frame (2): Solving a Hinge Frame	To be able to organize a presentation and the materials necessary to it using presentation software.
		16th	End-term Exam	

#### Evaluation Method and Weight (%)

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