

Anan College		Year	2024		Course Title	Machine Design and Drawing 1
Course Information						
Course Code	1213A01			Course Category	Specialized / Compulsory	
Class Format	Seminar			Credits	School Credit: 2	
Department	Course of Mechanical Engineering			Student Grade	3rd	
Term	Year-round			Classes per Week	前期:2 後期:2	
Textbook and/or Teaching Materials	Materials will be distributed as needed.					
Instructor	Yasuda Takeshi					
Course Objectives						
1. Student be able to understand the structure and function of the machine element given as an assignment. 2. Student be able to perform function and strength calculations. 3. Student be able to create basic design drawings based on specific dimensions. 4. Student be able to create drawings based on design documents and basic plans.						
Rubric						
	Ideal Level			Standard Level		Minimum Level
Achievement 1	Student be able to understand by self the structure and function of mechanical elements given as assignments.			Student be able to understand with guidance the structure and function of machine elements given as assignments.		Student be able to understand with personal guidance the structure and function of machine elements given as assignments.
Achievement 2	Student be able to solve by self functional and strength design for a given design origin.			Student be able to solve with guidance functional and strength design for a given design origin.		Student be able to solve with personal guidance functional and strength design for a given design origin.
Achievement 3	Student be able to draft plan drawing by self due to contents of the design document.			Student be able to draft plan drawing with guidance due to contents of the design document.		Student be able to draft plan drawing with personal guidance due to contents of the design document.
Assigned Department Objectives						
学習・教育到達度目標 D-1						
Teaching Method						
Outline	In machine design, knowledge and skills related to mechanical engineering including strength of materials, machine dynamics, and mechanism are required. In this course, students will learn about design and drafting techniques through lectures and exercises, with V-belt wheels and sliding bearings, and other mechanical elements that make up machines.					
Style	Each student will be given different design conditions according to their attendance number. After learning the outline of each mechanical element through lectures, the student will start design work. The design results will be checked as necessary and feedback will be provided. After the design is drawn, a plan will be made on graph paper, and then a CAD plan will be drawn. The drawings will be submitted as PDF files. [60 hours of class time]					
Notice	This course is deeply related to design of machine elements. Students are required to bring a calculator, report paper, drafting tools, and A4 grid paper when preparing their design documents. If you miss a class, do not understand the content of the class, or are behind in the progress of your assignments, you should make up for the delay by coming to the next class to ask questions. "Portfolio" of the evaluation weight includes evaluation of notes, design documents, plans, and CAD drawings. Reference: JIS Handbook Machine Elements (Japanese Standards Association)					
Characteristics of Class / Division in Learning						
<input type="checkbox"/> Active Learning		<input type="checkbox"/> Aided by ICT		<input type="checkbox"/> Applicable to Remote Class		<input type="checkbox"/> Instructor Professionally Experienced
Course Plan						
			Theme	Goals		
1st Semester	1st Quarter	1st	Overview of V-belt conduction equipment	Student be able to understand the structure and function of V-belt conduction.		
		2nd	Design of V-belt conduction equipment, pulley diameter	Student be able to design using given specifications.		
		3rd	Design of V-belt conduction equipment, pulley diameter	Student be able to design using given specifications.		
		4th	Design of V-belt conduction equipment, belt length	Student be able to design using given specifications.		
		5th	Design of V-belt conduction equipment, belt velocity	Student be able to design using given specifications.		
		6th	Design of V-belt conduction equipment, transfer power	Student be able to design using given specifications.		
		7th	Design of V-belt conduction equipment, shaft diameter	Student be able to design using given specifications.		
		8th	Design of V-belt conduction equipment, key	Student be able to design using given specifications.		
	2nd Quarter	9th	Draft plan drawing of V-belt parts	Student be able to draw draft plan based on the design.		
		10th	Draft plan drawing of V-belt parts	Student be able to draw draft plan based on the design.		

2nd Semester		11th	Drawing of V-belt parts diagrams using CAD	Student be able to draw parts diagrams using CAD based on the draft plan.
		12th	Drawing of V-belt parts diagrams using CAD	Student be able to draw parts diagrams using CAD based on the draft plan.
		13th	Drawing of V-belt parts diagrams using CAD	Student be able to draw parts diagrams using CAD based on the draft plan.
		14th	Drawing of V-belt parts diagrams using CAD	Student be able to draw parts diagrams using CAD based on the draft plan.
		15th	Quiz of V-belt conduction equipment design	
		16th		
	3rd Quarter	1st	Overview of sliding bearing	Student be able to understand the structure and function of sliding bearing.
		2nd	Design of sliding bearing, bearing metal	Student be able to design using given specifications.
		3rd	Design of sliding bearing, bearing cup	Student be able to design using given specifications.
		4th	Design of sliding bearing, bearing cup	Student be able to design using given specifications.
		5th	Design of sliding bearing, bolt	Student be able to design using given specifications.
		6th	Design of sliding bearing, bolt	Student be able to design using given specifications.
		7th	Design of sliding bearing, bearing base	Student be able to design using given specifications.
		8th	Design of sliding bearing, bearing base	Student be able to design using given specifications.
	4th Quarter	9th	Draft plan drawing of sliding bearing	Student be able to draw draft plan based on the design.
		10th	Draft plan drawing of sliding bearing	Student be able to draw draft plan based on the design.
		11th	Drawing of sliding bearing parts diagrams using CAD	Student be able to draw parts diagrams using CAD based on the draft plan.
		12th	Drawing of sliding bearing parts diagrams using CAD	Student be able to draw parts diagrams using CAD based on the draft plan.
		13th	Drawing of sliding bearing assemble diagrams using CAD	Student be able to draw assemble diagrams using CAD.
		14th	Drawing of sliding bearing assemble diagrams using CAD	Student be able to draw assemble diagrams using CAD.
		15th	Quiz of sliding bearing design	
		16th		

#### Evaluation Method and Weight (%)

	Midterm/Final exam	Quiz	Portfolio	Presentation/Attitude	Other	Total
Subtotal	0	20	80	0	0	100
Basic Proficiency	0	0	40	0	0	40
Specialized Proficiency	0	20	40	0	0	60
Cross Area Proficiency	0	0	0	0	0	0