

Anan College		Year	2024	Course Title	Experiments in Mechanical Engineering 2
Course Information					
Course Code	1213T02		Course Category	Specialized / Compulsory	
Class Format	Experiment / Practical training		Credits	School Credit: 4	
Department	Course of Mechanical Engineering		Student Grade	3rd	
Term	Year-round		Classes per Week	前期:4 後期:4	
Textbook and/or Teaching Materials	Materials will be distributed as needed.				
Instructor	Yasuda Takeshi,Itami Shin,Okita Yuji				
Course Objectives					
1. Student be able to demonstrate skill in more advanced lathe operations and sheet metal work with awareness of the accuracy, function, and cost of works. 2. Student be able to perform welding operations considering the function of welded parts and efficient work, and understand the characteristics of welding. 3. Student be able to understand the mechanism of internal combustion engines and the role of each mechanical element from disassembly and assembly work, and be able to handle tools appropriately. 4. Student be able to assemble and check the operation of a line-trace robot, and learn the basic knowledge of mechatronics technology necessary for mechanical engineers. 5. Student be able to conduct major experiments related to plastic forming and understand the characteristics of plastic forming.					
Rubric					
	Ideal Level		Standard Level		Minimum Level
Achievement 1	Student be able to demonstrate skill in more advanced lathe operations and sheet metal works with awareness of the accuracy, function, and cost of works.		Student be able to demonstrate skill in more advanced lathe operations and sheet metal works.		Student works in more advanced lathe operations and sheet metal works.
Achievement 2	Student be able to perform welding operations considering the function of welded parts and efficient work, and understand the characteristics of welding.		Student be able to perform welding operations considering the function of welded parts and efficient work.		Student works welding operations considering the requirement.
Achievement 3	Student be able to understand the mechanism of internal combustion engines and the role of each mechanical element from disassembly and assembly work, and be able to handle tools appropriately.		Student be able to work for engine disassembly and assembly, and be able to handle tools appropriately.		Student works for engine disassembly and assembly with handle tools appropriately.
Achievement 4	Student be able to assemble and check the operation of a line-trace robot, and learn the basic knowledge of mechatronics technology necessary for mechanical engineers.		Student be able to a line-trace robot work, and learn the basic knowledge of mechatronics technology.		Student works with a line-trace robot, and know about it.
Achievement 5	Student be able to conduct major experiments related to plastic forming and understand the characteristics of plastic forming.		Student be able to conduct major experiments related to plastic forming.		Student works about major experiments related to plastic forming.
Assigned Department Objectives					
学習・教育到達度目標 D-2					
Teaching Method					
Outline	Students will understand the importance of technology for machining machine parts with higher precision using machine tools such as lathes and laser cutter, bender, as well as the characteristics of welding and plastic working, by working on each of the practical tasks. In engine disassembly and mechatronics, students learn the roles of machines and machine elements, their operations, and automatic control techniques.				
Style	Students will be divided into 5 or 6 groups. [120 hours of class time]				
Notice	The other goals are to learn how to prepare for work (safety first) and how to write a report. During the practical training, students must always wear work clothes and pay sufficient attention to safety. Be sure to understand and master specific techniques through practical training. Students should not only be satisfied with the tasks given to them, but also make efforts to cultivate an engineering sense in manufacturing by carefully observing the phenomena.				
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	Sheet metal works	Through the production by operating a laser cutter and bender, student be able to manufacture with an awareness of the accuracy, function, and beautiful finish of parts.	

		2nd	Sheet metal works	Through the production by operating a laser cutter and bender, student be able to manufacture with an awareness of the accuracy, function, and beautiful finish of parts.
		3rd	Sheet metal works	Through the production by operating a laser cutter and bender, student be able to manufacture with an awareness of the accuracy, function, and beautiful finish of parts.
		4th	Sheet metal works	Through the production by operating a laser cutter and bender, student be able to manufacture with an awareness of the accuracy, function, and beautiful finish of parts.
		5th	Sheet metal works	Through the production by operating a laser cutter and bender, student be able to manufacture with an awareness of the accuracy, function, and beautiful finish of parts.
		6th	Engine disassembly and reassembly	Through disassembly and assembly of a gasoline engine, students will learn the mechanism of the internal combustion engine and the role of each mechanical element. Students will also learn how to handle parts and tools.
		7th	Engine disassembly and reassembly	Through disassembly and assembly of a gasoline engine, students will learn the mechanism of the internal combustion engine and the role of each mechanical element. Students will also learn how to handle parts and tools.
		8th	Engine disassembly and reassembly	Through disassembly and assembly of a gasoline engine, students will learn the mechanism of the internal combustion engine and the role of each mechanical element. Students will also learn how to handle parts and tools.
	2nd Quarter	9th	Engine disassembly and reassembly	Through disassembly and assembly of a gasoline engine, students will learn the mechanism of the internal combustion engine and the role of each mechanical element. Students will also learn how to handle parts and tools.
		10th	Engine disassembly and reassembly	Through disassembly and assembly of a gasoline engine, students will learn the mechanism of the internal combustion engine and the role of each mechanical element. Students will also learn how to handle parts and tools.
		11th	Lathe	Through detailed planning of work processes and the manufacture of machine parts by lathe operation based on these plans, students acquire skills to be aware of the accuracy, function, and cost of parts.
		12th	Lathe	Through detailed planning of work processes and the manufacture of machine parts by lathe operation based on these plans, students acquire skills to be aware of the accuracy, function, and cost of parts.
		13th	Lathe	Through detailed planning of work processes and the manufacture of machine parts by lathe operation based on these plans, students acquire skills to be aware of the accuracy, function, and cost of parts.
		14th	Lathe	Through detailed planning of work processes and the manufacture of machine parts by lathe operation based on these plans, students acquire skills to be aware of the accuracy, function, and cost of parts.
		15th	Lathe	Through detailed planning of work processes and the manufacture of machine parts by lathe operation based on these plans, students acquire skills to be aware of the accuracy, function, and cost of parts.
		16th		
2nd Semester	3rd Quarter	1st	Welding	Through the fabrication of pressure vessels by welding, students will acquire more advanced skills in consideration of efficient work. In addition, students will learn the function of welded products and the effects of defects.
		2nd	Welding	Through the fabrication of pressure vessels by welding, students will acquire more advanced skills in consideration of efficient work. In addition, students will learn the function of welded products and the effects of defects.
		3rd	Welding	Through the fabrication of pressure vessels by welding, students will acquire more advanced skills in consideration of efficient work. In addition, students will learn the function of welded products and the effects of defects.

		4th	Welding	Through the fabrication of pressure vessels by welding, students will acquire more advanced skills in consideration of efficient work. In addition, students will learn the function of welded products and the effects of defects.
		5th	Welding	Through the fabrication of pressure vessels by welding, students will acquire more advanced skills in consideration of efficient work. In addition, students will learn the function of welded products and the effects of defects.
		6th	Mechatronics	Student be able to understand basic knowledge of mechatronics technology (electrical and electronic circuits, control programming) that necessary for mechanical engineers through the assembly and operation check of a line-trace robot.
		7th	Mechatronics	Student be able to understand basic knowledge of mechatronics technology (electrical and electronic circuits, control programming) that necessary for mechanical engineers through the assembly and operation check of a line-trace robot.
		8th	Mechatronics	Student be able to understand basic knowledge of mechatronics technology (electrical and electronic circuits, control programming) that necessary for mechanical engineers through the assembly and operation check of a line-trace robot.
	4th Quarter	9th	Mechatronics	Student be able to understand basic knowledge of mechatronics technology (electrical and electronic circuits, control programming) that necessary for mechanical engineers through the assembly and operation check of a line-trace robot.
		10th	Mechatronics	Student be able to understand basic knowledge of mechatronics technology (electrical and electronic circuits, control programming) that necessary for mechanical engineers through the assembly and operation check of a line-trace robot.
		11th	Experiment of plastic forming	Students be able to understand major plastic forming tests such as deep drawing test, cornical cup test, shearing observation, etc., and acquire the characteristics of plastic forming.
		12th	Experiment of plastic forming	Students be able to understand major plastic forming tests such as deep drawing test, cornical cup test, shearing observation, etc., and acquire the characteristics of plastic forming.
		13th	Experiment of plastic forming	Students be able to understand major plastic forming tests such as deep drawing test, cornical cup test, shearing observation, etc., and acquire the characteristics of plastic forming.
		14th	Experiment of plastic forming	Students be able to understand major plastic forming tests such as deep drawing test, cornical cup test, shearing observation, etc., and acquire the characteristics of plastic forming.
		15th	Experiment of plastic forming	Students be able to understand major plastic forming tests such as deep drawing test, cornical cup test, shearing observation, etc., and acquire the characteristics of plastic forming.
		16th		

Evaluation Method and Weight (%)

	Midterm/Final exam	Quiz	Portfolio	Presentation/Attitude	Other	Total
Subtotal	0	0	30	70	0	100
Basic Proficiency	0	0	0	70	0	70
Specialized Proficiency	0	0	30	0	0	30
Cross Area Proficiency	0	0	0	0	0	0