

Akashi College		Year	2022		Course Title	Production Systems
Course Information						
Course Code	4021			Course Category	Specialized / Elective	
Class Format	Lecture			Credits	Academic Credit: 2	
Department	Mechanical and Electronic System Engineering			Student Grade	Adv. 1st	
Term	First Semester			Classes per Week	2	
Textbook and/or Teaching Materials						
Instructor	ONISHI Shosaku					
Course Objectives						
1) Understand that design activities in a broad sense are an important and major part of building a production system. Comprehensibly understand the concepts and methods of specific function deployment, focusing on mechanical and electrical elements, when the required function that is the starting point for design activities has been provided or found by oneself. 2) Have the skills to be able to embody the above in 1). 3) Acquire skills through reports and lectures to be able to design from a comprehensive and broad perspective, since this course's content falls within part of basic engineering and within the basic background knowledge that forms the basis of combined fields (mechanical and electronic systems).						
Rubric						
		Ideal Level	Standard Level		Unacceptable Level	
Achievement 1		Fully understand that design activities in a broad sense are an important and major part of building a production system. Upon doing so, find the required function by oneself and comprehensibly understand the concepts and methods of specific function deployment, focusing on mechanical and electrical elements.	Understand that design activities in a broad sense are an important and major part of building a production system. Upon doing so, regarding the provided required function, understand the concepts and methods of specific function deployment, focusing on mechanical and electrical elements.		Do not fully understand that the design activities in a broad sense are an important and major part of building a production system. In addition, regarding the provided required function, do not fully understand the concepts and methods of specific function deployment, focusing on mechanical and electrical elements.	
Achievement 2		Can find the required function on one's own and realize and apply specific function deployment.	Can realize specific function deployment when the required function is provided.		Cannot fully realize specific function deployment when the required function is provided.	
Achievement 3		Can design from a comprehensive and broad perspective.	While insufficient, can work towards designing from a comprehensive and broad perspective.		Do not work toward designing from a comprehensive and broad perspective.	
Assigned Department Objectives						
Teaching Method						
Outline	In order to produce products, engineers need extensive knowledge and information. Manufacturing requires an understanding of manufacturing systems (production systems), with a focus on design in a broad sense, that starts with identifying the customer needs. This course features lectures focused on how to design in a broad sense, which is an important and major part of building a production system, and aims to acquire the knowledge concerned with this. This course will be taught by faculty members who have been responsible for planning, design (design in a broad sense), etc. in a company and will make use of their experiences.					
Style	The goal is to learn the way of thinking needed for the practical design of the design process' key parts. In the first half, lectures will be conducted mainly using textbooks, and in the second half, handouts will be distributed as necessary. To ensure that the course content is both understood and learned, students should pre-study and review each lesson. In addition, in order to enhance understanding toward a comprehensive and broad manufacturing, students will be given report assignments on themes including social issues as well as design. They must submit all assignments. Students who miss 1/3 or more of classes will not be eligible for a passing grade.					
Notice	This course's content will amount to 90 hours of study in total. These hours include the learning time guaranteed in classes and the standard self-study time required for pre-study / review, and completing assignment reports. Overall evaluation formula: Grade (marks out of 100) = Exam (midterm) × 0.4 + Exam (final) × 0.4 + Report (marks out of 20)					
Characteristics of Class / Division in Learning						
<input type="checkbox"/> Active Learning		<input type="checkbox"/> Aided by ICT		<input checked="" type="checkbox"/> Applicable to Remote Class	<input checked="" type="checkbox"/> Instructor Professionally Experienced	
Course Plan						
			Theme	Goals		
1st Semester	1st Quarter	1st	Orientation Lecture on an outline of production systems. (The relationship between production systems and design in a broad sense)	Can explain the aims and how classes will be conducted. Can also explain an outline of a production system (the relationship between the production system and the design in a broad sense).		
		2nd	Lecture on the significance of design: "What is design?"	Can explain attitudes, basic perspectives, and the development of machinery and design. Can also explain the necessity for sustainable development based on the significance of design.		

		3rd	Lecture on the process of design: "What do you decide on and what are the steps?"	Can explain the overall process and matters to decide.
		4th	Lecture on the process of design: "What do you decide on and what are the steps?"	Can explain topics such as planning, concept design, development planning, detailed design, production, inspection, testing, and post-design processes (including patents, and external announcement).
		5th	Lecture on design concepts: "How do you create ideas?"	Can explain attitudes, way of thinking, creating an overview and idea of value offered to customer at the concept design stage.
		6th	Lecture on design concepts: "How do you create ideas?" (Part 2)	Can explain the required function's concept and creating an overview for mechanisms and structures.
		7th	Lecture on function and mechanism realization: "How do you give form to your idea?"	Can explain topics such as functions and systems, basic functions and mechanical elements, electronics, software, function-to-mechanism deployment, and the future of mechatronics.
		8th	Midterm exam	Can answer questions on content learned in the first half of the semester.
	2nd Quarter	9th	Return the exam results and explain the model answers. Lecture on compliance (conforming to laws, specifications, and standards).	Can explain the content of the midterm exam. Can explain compliance's importance, laws, standards, specifications and standards.
		10th	Lecture on matters relating to contracts (when making quotations, signing contracts, and placing orders).	Can explain the key points for making quotations, basic knowledge of legal matters, things to note when making quotation, signing contracts, and placing orders.
		11th	Lecture on production systems and control techniques for production and processing.	Can explain an outline of production systems, production control, quality assurance and quality control, measurement and measurement technologies.
		12th	Lecture on maintenance.	Can explain an overview of maintenance, methods of preventive maintenance and their features, facility diagnostic techniques, and life cycle assessments.
		13th	Lecture on safety, security, and project management.	Can explain social requirements and intrinsic safety. Can explain an outline of project management.
		14th	Lecture on universal design.	Can explain the general concept of universal design.
		15th	Lecture summarizing the production system lectures' content from weeks 1 to 14.	Can explain the main and important parts of this course.
		16th	Final exam	Can answer questions on content learned in the second half of the semester.

Evaluation Method and Weight (%)	
Method	Weight (%)
Method 1	30
Method 2	40
Method 3	30

[illegible]