Automation Technology 1

Basic Course Information

Course Number	01005133	**Subject Category**	Compulsory IMI
Class Format	Lecture	**Credit Type and Number of Credits**	1
Department	Mechatronics	**Student Category**	Year 5
Period of Study	Semester 1	**Classes per Week**	1
Required Materials			
Instructor	Thanapol Luckanawat, Takahisa Yamamoto		

Course Objective

To introduce the fundamentals of automation technology with a focus on conveyor systems, their design principles, related sensors and controllers including PLC, and the application of CAD tools, QR codes, and motors in the field. At the end of this course, the students are able to explain the sensors, controllers, and related technologies, and design the conveyor systems.

Evaluation (Rubric)	Ideal Level of Achievement (Very Good)	Standard Level of Achievement (Good)	Unacceptable Level of Achievement (Fail)
can explain the characteristics of conveyor systems and the basic components and operations.	can explain the characteristics of conveyor systems and the basic components and operations in detail and precisely.	can explain the characteristics of conveyor systems and the basic components and operations.	can not explain the characteristics of conveyor systems and the basic components and operations.
can identify the role of sensors in conveyor systems and automation, and demonstrate knowledge of sensor types, their functions, and applications.	can identify the role of sensors in conveyor systems and automation, and demonstrate knowledge of sensor types, their functions, and applications, in detail and precisely.	can identify the role of sensors in conveyor systems and automation, and demonstrate knowledge of sensor types, their functions, and applications.	can not identify the role of sensors in conveyor systems and automation, and demonstrate knowledge of sensor types, their functions, and applications.
can use CAD tools to design and model conveyor systems and components and simulate the mechanics of the systems.	can use CAD tools to design and model conveyor systems and components precisely and simulate the mechanics of the systems correctly.	can use CAD tools to design and model conveyor systems and components and simulate the mechanics of the systems.	Can use CAD tools to design and model conveyor systems and components and simulate the mechanics of the systems.

Relationship with Learning Outcomes

M(1) Ability to design, propose and develop robotic/ mechatronic systems to solve specific problems

M(2) Ability to design, propose and develop electrical and electronic systems for robotic/ mechatronic systems

M(3) Ability to design, propose and develop mechanical solutions/ systems for robotic/ mechatronic systems

Teaching Method

Outline:	Lecture and Practice
Class Format:	Lecture, Practice and Homework Assignments
Please Note :	Students are required to ask any questions after sufficient self-learning

Course Plan

Semester 1	Contents and Method of Course	Goals	Related MCC		
1st week	Guidance of Automation Technology	Explaining what "Automation Technology" is.			
2nd week	Review of Mechanics	Calculating bending problems and drawing SFD and BMD.	V-A	3	65
			V-A	3	66
			V-A	3	67
			V-A	3	68
			V-A	3	69
			V-A	3	70
3rd week	Chute conveyor	Explaining the mechanics of the chute conveyor	V-A	3	51
			V-A	3	52
			V-A	3	53
			V-A	3	54
4th week	Designing chute conveyor	Can design the chute conveyor	V-A	3	51
			V-A	3	52
			V-A	3	53
			V-A	3	54
5th week	Belt conveyor and roller conveyor	Explaining the differences between belt and roller conveyors	V-A	3	51
			V-A	3	52
			V-A	3	53
			V-A	3	54
6th week	Designing belt conveyor	Can design belt conveyor	V-A	3	51
			V-A	3	52
			V-A	3	53
			V-A	3	54
7th week	Designing roller conveyor	Can design roller conveyor	V-A	3	51
			V-A	3	52
			V-A	3	53
			V-A	3	54
8th week	Mid-term examination				
9th week	Controllers and sensors in conveyor systems	Can identify the role of sensors and controllers (PLC) in conveyor systems and automation.	V-C	1	11
			V-C	1	12
			V-C	1	13
			V-C	1	14
			V-C	1	15
10th week	Designing conveyor systems by using CAD (1)	Can design conveyor systems and their components using CAD	V-A	1	8
			V-A	1	9
			V-A	1	10
11th week	Designing conveyor systems by using CAD (2)	Can design conveyor systems and their components using CAD	V-A	1	8
			V-A	1	9
			V-A	1	10
12th week	Soring systems used in logistic systems	Can explain sorting systems in conveyor systems and applications	V-A	2	11
			V-A	2	12
			V-A	2	13
13th week	Mechanics and Equipments in logistic systems	Group work for designing logistic system	V-A	2	11
			V-A	2	12
			V-A	2	13
14th week	Design logistic system (1)	Group work for designing logistic system	V-A	1	8
			V-A	2	11
			V-A	2	12
			V-A	2	13
15th week	Design logistic system (2)	Group work for designing logistic system	V-A	1	8
			V-A	2	11
			V-A	2	12
			V-A	2	13
16th week	Design logistic system (3)	Group work for designing logistic system	V-A	1	8
			V-A	2	11
			V-A	2	12
			V-A	2	13
17th week	Presentation of designed logistic system	Group work for designing logistic system			
18th week	Preparation for final examination				
19th week	Final examination				
20th week	wrap-up				

Do not

	Examination	Quiz	Mutual Evaluations between students	Report	Portfolio	Other
Basic Ability	40			20		
Technical Ability	0			20		
Interdisciplinary Ability				20		