Programming 5

Basic Course Information

Course Number	01005085	**Subject Category**	Compulsory (M)
Class Format	Lecture	**Credit Type and Number of Credits**	1
Department	Mechatronics	**Student Category**	Year 3
Period of Study	Semester 1	**Classes per Week**	1
Required Materials	Google Colaboratory and GitHub, Internet connection is required.		
Instructor	Takahisa Yamamoto	Vorapong Suttiteakarn	

Course Objective

The course provides students with introduction and basic knowledge of "C" language. Students learn programming in C and language to develo IoT systems.

Evaluation(Rubric)	Ideal Level of Achievement (Very Good)	Standard Level of Achievement (Good)	Unacceptable Level of Achievement (Fail)
	Ideal Level of Achievement (Very Good)	Standard Level of Achievement (Good)	Unacceptable Level of Achievement (Fail)
Can explain how to write basic programs by using C.	Can explain how to write basic programs by using C detailedly and precisely.	Can explain how to write basic programs by using C.	Can't explain how to write basic programs by C.
Can implement basic programs by using C.	Can implement basic programs by using C detailedly and precisely.	Can implement basic programs by using C.	Can't implement basic programs by using C.
Can solve engineering problems by using computer programs of C.	Can solve engineering problems by using computer programs of C detailedly and precisely.	Can solve engineering problems by using computer programs of C.	Can't solve engineering problems by using computer programs of C.
Can explain how to write basic IoT programs (C/C++ like programming language)	Can explain how to write basic IoT programs detailedly and precisely.	Can explain how to write basic IoT programs.	Can't explain how to write basic IoT programs.
Can implement basic IoT programs (C/C++ like programming language)	Can implement basic IoT programs detailedly and precisely.	Can implement basic IoT programs.	Can't implement basic IoT programs.

Relationship with Learning Outcomes
M(4) Ability to design and develop the software for control robotic/ mechatronic systems.
Please change
Please change

Teaching Method	
Outline:	Repeat of Drill-Explanation-Drill
Class Format:	Lecture and Drill
Please Note :	Students are required to ask any question after sufficient self-learning.

Course Plan

Semester 1	**Contents and Method of Course**	**Goals**	**Related MCC**
1st week	Guidance: Introduction, PC setting and basis of C programming	Understanding background of programming	V-D 1 1 V-D 1 2 V-D 1 3 V-D 1 4 V-D 1 5
2nd week	Basics of conditional branch (1) and repeat processing	Implementing conditional branch and repeat processing	V-A 7 156 V-A 7 157 V-A 7 158 V-A 7 159 V-A 7 160 V-A 7 161
3rd week	Variable and equation (1)	Explaining types of variables and implementing codes using the variables	V-A 7 156 V-A 7 157 V-A 7 158 V-A 7 159 V-A 7 160 V-A 7 161
4th week	Variable and equation (2)	Explaining types of variables and implementing codes using the variables	V-A 7 156 V-A 7 157 V-A 7 158 V-A 7 159 V-A 7 160 V-A 7 161
5th week	Comparison algorithm and logic operation / Numerical error	Implementing comparison algorithm and logic operation, and explaining the error of floating value	V-A 7 156 V-A 7 157 V-A 7 158 V-A 7 159 V-A 7 160 V-A 7 161
6th week	Conditional branch (2)	Implementing conditional branch and repeat processing	V-A 7 156 V-A 7 157 V-A 7 158 V-A 7 159 V-A 7 160 V-A 7 161
7th week	Preparing mid-term examination		
8th week	Mid-term examination		
9th week	ArraY	Implementing array operation	V-A 7 159 V-A 7 160 V-A 7 161 V-A 7 162 V-A 7 163 V-A 7 164
10th week	Pointer and memory address	Explaining the basis of pointer in C, and implementing the programs using the pointer	V-A 7 159 V-A 7 160 V-A 7 161 V-A 7 162 V-A 7 163 V-A 7 164
11th week	IoT programming (1) (TinkerCAD / LED blinking control / CdS)	Setting Arduino IDE and implementing basic IoT programming (1)	
12th week	IoT programming (2) (Ultrasonic sensor / Thermo-sensor / PWM)	Implementing IoT programming (2)	
13th week	IoT programming (3) (Motor control)	Implementing IoT programming (3)	
14th week	IoT programming (4) (Group work 1)	Implementing IoT programming (4)	
15th week	IoT programming (5) (Group work 2)	Implementing IoT programming (5)	
16th week	IoT programming (6) (Group work 3)	Implementing IoT programming (6)	
17th week			
18th week	Preparing final examination	Review and summarize learning after the mid-term exam	
19th week	Final examination		
20th week	Return exam papers and feedback	Review and summarize learning during this course	

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	Examination	**Quiz**	**Mutual Evaluations between students**	**Report**	**Portfolio**	**Other**
Basic Ability	90			40		
Technical Ability	10			20		
Interdisciplinary Ability						