Data structure and Algorithm

Basic Course Information

Course Number	02005121	**Subject Category**	Compulsory (C)
Class Format	Lecture	**Credit Type and Number of Credits**	1
Department	Computer	**Student Category**	Year 3
Period of Study	Semester 2	**Classes per Week**	1
Required Materials			
Instructor	Yuki Yoshikawa	Saunghninpowint Oo	

Course Objective

This course provides students with introduction and basic knowledge of Data Structure and Algorithm in computing. This subject covers the design, analysis and implementation of data structures and algorithms. These knowleges are useful for developing programming skills and solving engineering problems.

Evaluation(Rubric)	Ideal Level of Achievement (Very Good)	Standard Level of Achievement (Good)	Unacceptable Level of Achievement (Fail)
Understanding basic data structure	Able to explain basic data structure	Able to explain some of basic data structure	Unable to explain basic data structure
Understanding tree data structure	Able to explain tree data structure	Able to explain some of tree data structure	Unable to explain tree data structure
Understanding basic algorithms such as search and sort	Able to explain basic algorithms such as search and sort	Able to explain some of basic algorithms such as search and sort	Unable to explain basic algorithms such as search and sort
Understanding advanced algorithms such as Backtracking method and Dynamic programming	Able to explain advanced algorithms such as Backtracking method and Dynamic programming	Able to explain some of advanced algorithms such as Backtracking method and Dynamic programming	Unable to explain advanced algorithms such as Backtracking method and Dynamic programming

Relationship with Learning Outcomes
C(1) Ability to operate and administer the computer software and hardware
C(2) Ability to understand the operating system and to develop software to solve specific problems.
Please change

Teaching Method	
Outline:	Lecture and practice, group discussion
Class Format:	
Please Note :	

Course Plan

Semester 2	Contents and Method of Course	Goals	Related MOC		
week 1	Introduction to algorithm complexity	Be able to understand and explain what is algorithm and its complexity	V-D	1	1
			V-D	3	31
week 2	Basic data structures Array, List	Be able to understand and explain basic data structures such as Array and List	V-D	1	2
			V-D	3	32
week 3	Linked lists Implementing pointers, Insertion and deletion	Be able to understand and explain linked lists	V-D	1	3
			V-D	3	33
			V-D	3	35
week 4	Tree structures Binary trees, tree traversal, formula trees	Be able to understand and explain tree structures	V-D	1	4
			V-D	3	34
			V-D	3	36
week 5	Tree structures Binary trees, tree traversal, formula trees	Be able to understand and explain tree structures	V-D	1	5
			V-D	3	37
week 6	Search Linear search and binary search Hash method	Be able to understand and explain search algorithms and hash method	V-D	1	6
			V-D	3	38
week 7	Search Linear search and binary search Hash method	Be able to understand and explain search algorithms and hash method			
week 8	Midterm Report		V-D	1	1
			V-D	1	2
			V-D	3	51
week 9	Midterm Report				
week 10	Sort Simple sorting algorithms	Be able to understand and explain simple sorting algorithms			
week 11	Sort Quick sort, heap sort	Be able to understand and explain advanced sorting algorithms	V-D	3	40
			V-D	3	41
			V-D	3	44
			V-D	3	45
week 12	String search	Be able to understand and explain string search	V-D	3	40
			V-D	3	41
			V-D	3	44
			V-D	3	45
week 13	Regular expressions	Be able to understand and explain regular expressions and automata	V-D	3	39
			V-D	3	40
			V-D	3	41
week 14	Advanced algorithms	Be able to understand and explain Backtracking method, Dynamic programming, etc.	V-D	3	39
			V-D	3	40
			V-D	3	41
week 15	Memory management algorithms	Be able to understand and explain Static and dynamic allocation Garbage collector	V-D	3	42
			V-D	3	43
			V-D	3	44
			V-D	3	45
week 16	Memory management algorithms	Be able to understand and explain Static and dynamic allocation Garbage collector	V-D	3	42
			V-D	3	43
			V-D	3	44
			V-D	3	45
week 17	Final Report		V-D	3	40
			V-D	3	41
			V-D	3	44
			V-D	3	45
week 18	Final Report		V-D	3	40
			V-D	3	41
			V-D	3	44
			V-D	3	45
week 19	Review and conclusion				
week 20					

Do not c

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