Akashi College		ollege	Year	ear 2022		Course Title	Discrete Mathematics B						
Course	Informa	tion											
Course Code 4417 Course Category Specialized / Compulsory													
Class Format Lecture					Credits	School C	edit: 1						
<u> </u>	Computer		and Computer Engineering Engineering Course		Student Grade	4th							
Term Second Seco			nester		Classes per Wee	eek 2							
Teaching	Matérials	HAMADA V	ukihiro										
Instructor HAMADA Yukihiro Course Objectives													
[1] Can explain the generalized concept of being equal and being larger (smaller). [2] Can explain the basics of graph theory. [3] Can explain the basics of formal language theory.													
Rubric													
T. G. Diric			Ideal Level		Standard Level Unacceptable Level								
Achievement 1			Can explain the equivalence relation, partial orders, and total orders accurately.		Can explain the equivalence relation, partial orders, and total orders.		Cannot explain the equivalence relation, partial orders, and total orders.						
Achievement 2			Can explain the path, connectivity, and tree of graph theory accurately.		Can explain the path, connectivity, and tree of graph theory.		Cannot explain the path, connectivity, and tree of graph theory.						
Achievement 3			ree grammar,	s form, context- finite automaton, immar correctly.	Can use Backus free grammar, f and regular gra	inite automator	Cannot use Backus form, context-free grammar, finite automaton, and regular grammar.						
Assigne	d Depar	tment Obje	ctives										
	ng Metho												
Discrete mathematics is a field of mathematics that deals with finite or discrete subjects, and one of the foundations of computer science. In this course, you will learn about relations on a set, graphs and trees, finite automaton and regular grammar.													
Style		Classes will	be held in a le	cture style.									
Make sure you understand the exact definition of the term and get an intuitive image from the formal description. Try to solve the examples or exercise problems yourself and score it against the answer.  Students who miss 1/3 or more of classes will not be eligible for a passing grade.													
Charact	eristics	of Class / Di	vision in Lea	arning	_	· · ·							
□ Active	Learning		☑ Aided by IC	Г	☑ Applicable to	Remote Class	☐ Instructor Professionally Experienced						
Course	Plan												
			neme			Goals							
	3rd Quarter	1st Bin	ary relation 1 o	of 2		Can explain the basics of binary relation.							
2nd Semeste r		2nd Bin	ary relation 2 o	of 2	(	Can calculate composition and exponentiation of binary relation.							
		3rd Equ	quivalence relation 1/2			Can explain the equivalence relation, which is a generalization of the concept of equal.							
		4th Equ	quivalence relation 2/2			Can handle equivalence class, quotient set, and subdivisions of equivalence relation.							
		5th Ord	rder 1 of 2			Can explain the partially ordered set and total order of the inequality (=) generalization.							
		6th Ord	rder 2 of 2			Can handle the upper extremum, lower extremum, maximum, and minimum values of a partially ordered set, and can explain the above (below) boundary.							
			idterm exam is given during class.										
		8th Illu	lustration of binary relation			Can illustrate the binary relation as a directed graph.							
	4th Quarter		asse diagram, topological sort, and transitive			Can draw a Hasse diagram of partially ordered set, and can explain the closure of topological sort and transitive.							
		10th Gra				Can explain the basics of graphs.							
		11th Gra	raph basics 2 of 2			Can explain n-partite graph and several kinds of paths in a graph. Also, can represent a graph by adjacency matrix, adjacency list and incidence matrix.							
		12th The	ne connectivity of a graph			Can explain the diameter, radius, connected component, cut vertex, bridge, connectivity and edge connectivity. Also, can explain n-connected and n-edge connected.							
		13th Tre	e		Įt	Can explain the fundamental concepts and theorems about trees. Also, can explain ordered tree, positional tree, binary tree and n-ary tree.							

		14th	Finite automaton automaton	and nondetermin	istic finite	Can define FA and NFA formally and draw their state transition diagrams. Also, can determine the language that they accept.					
		15th	Regular grammar	and regular expr	ession	Can define right linear grammar and left linear grammar formally, and determine the language that they generate. Can represent a given language by regular expression.					
			Final exam								
Evaluation Method and Weight (%)											
	Ex	amination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total			
Subtotal	10	00	0	0	0	0	0	100			
Basic Proficiency	0		0	0	0	0	0	0			
Specialized Proficiency	10	00	0	0	0	0	0	100			
Cross Area Proficiency	0		0	0	0	0	0	0			