

 ISO 9001 : 2000	FORMULIR PEDOMAN PENGAJARAN	Nomor Dok : FRM/KUL/01/02
		Nomor Revisi : 03
		Tgl. Berlaku : 1 Oktober 2008
		Klausa ISO : 7.5.1 dan 7

Dibuat oleh	Diperiksa oleh	Disetujui oleh	Berlaku tanggal
Diana,S.Si, M.Kom	Ahmad Luthfi, S.Kom., M.Kom	M. Izman Herdiansyah, ST, MM, PhD	

1. Faculty : Computer Science
2. Study Program : Magister of Information Technology
3. Program : S2 Degree
4. Subject : Algorithms analysis
5. Subject Code :
6. Pre requisite Subject :
7. Subject Status :
8. Description : *A problem* in this course is a general question to be answered, usually possessing one or more *parameters*. It can be specified by describing the form of parameters taken and the questions about the parameters. An *instance* of a problem is an assignment of values to the parameters. An *algorithm* is a clearly specified set of simple instructions to be followed to solve a problem. In other words, it is a step-by-step procedure for taking *any* instance of a problem and producing a correct answer for that instance.
9. Competencies :
10. Weekly Learning Process Implementation :



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No	Topic / Learning Materials	Sub topic	References	Remarks
1	Introduction	<ul style="list-style-type: none"> • How to Use this Book • Overview of chapters • Pseudocode • Useful texts 	Parberry, Ian dan William Gasarch. 2002. Problems on Algorithms. Texas: Prentice Hall Inc.	
2	Mathematical induction	<ul style="list-style-type: none"> • Summations • Inequalities • Floors and ceilings • Divisibility • Postage stamps • Chessboard problems • Fibonacci Numbers • Binomial Coefficients • What is Wrong? • Graphs • Trees • Geometry • Miscellaneous • Hints • Solutions • Comment 	Parberry, Ian dan William Gasarch. 2002. Problems on Algorithms. Texas: Prentice Hall Inc.	
3	Big-O and Big Ω	<ul style="list-style-type: none"> • Rank the Functions • True and false? 	Parberry, Ian dan William Gasarch. 2002. Problems on Algorithms. Texas: Prentice Hall Inc.	



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		<ul style="list-style-type: none"> • Proving Big-O • Manipulating Big-O • Alternative definitions • Hints • Solutions • Comments 		
4	Recurrence Relations	<ul style="list-style-type: none"> • Simple recurrences • More difficult recurrences • General formulae • Recurrences with full history • Recurrences with Floors and Ceilings • Hints • Solutions • comments 	Parberry, Ian dan William Gasarch. 2002. Problems on Algorithms. Texas: Prentice Hall Inc.	
5	Correctness Proofs	<ul style="list-style-type: none"> • Iterative Algorithms • Recursive Algorithms • Combined Iteration and Recursion • Hints • Solutions • Comments 	Parberry, Ian dan William Gasarch. 2002. Problems on Algorithms. Texas: Prentice Hall Inc.	
6	Algorithm Analysis	<ul style="list-style-type: none"> • Iterative Algorithms • Recursive Algorithms • Combined Iteration and Recursion • Hints • Solutions • Comments 	Parberry, Ian dan William Gasarch. 2002. Problems on Algorithms. Texas: Prentice Hall Inc.	
7	Divide-and-Conquer	<ul style="list-style-type: none"> • Maximum and Minimum • Integer Multiplication • Strassen's Algorithm • Binary Search 	Parberry, Ian dan William Gasarch. 2002. Problems on Algorithms. Texas: Prentice Hall Inc.	



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		<ul style="list-style-type: none"> • Quicksort • Towers of Hanoi • Depth-First Search Applications 79 • Hints • Solutions • Comments 		
8	MID TEST	<ul style="list-style-type: none"> • Exam 	Parberry, Ian dan William Gasarch. 2002. Problems on Algorithms. Texas: Prentice Hall Inc.	
9	Dynamic Programming	<ul style="list-style-type: none"> • Iterated Matrix Product • The Knapsack Problem • Optimal Binary Search Trees • Floyd's Algorithm • Applications • Finding the Solutions • Hints • Solutions • Comments 	Parberry, Ian dan William Gasarch. 2002. Problems on Algorithms. Texas: Prentice Hall Inc.	
10	Greedy Algorithms	<ul style="list-style-type: none"> • Continuous Knapsack • Dijkstra's Algorithm • Min-Cost Spanning Trees • Traveling Salesperson • Applications • Hints • Solutions • Comments 	Parberry, Ian dan William Gasarch. 2002. Problems on Algorithms. Texas: Prentice Hall Inc.	
11	Exhaustive Search	<ul style="list-style-type: none"> • Strings • Permutations • Combinations • Other Elementary Algorithms 	Parberry, Ian dan William Gasarch. 2002. Problems on Algorithms. Texas: Prentice Hall Inc.	



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		<ul style="list-style-type: none"> • Backtracking • Applications • Hints • Solutions • Comments 		
12	Data Structures	<ul style="list-style-type: none"> • Heaps • AVL Trees • Trees • The Union-FindProblem • Applications • Hints • Solutions • Comments 	Parberry, Ian dan William Gasarch. 2002. Problems on Algorithms. Texas: Prentice Hall Inc.	
13	NP-completeness	<ul style="list-style-type: none"> • General • Cook Reductions • What is Wrong? • Circuits • One-in-Three 3SAT • Factorization • Hints • Solutions • Comments 	Parberry, Ian dan William Gasarch. 2002. Problems on Algorithms. Texas: Prentice Hall Inc.	
14	Miscellaneous	<ul style="list-style-type: none"> • Sorting and Order Statistics • Lower Bounds • Graph Algorithms • Maximum Flow • Matrix Reductions • General • Hints • Solutions 	Parberry, Ian dan William Gasarch. 2002. Problems on Algorithms. Texas: Prentice Hall Inc.	



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		• Comments		
15	Review			
16	Final test	Exam		

11. Evaluation :

12. Reference :

1. Parberry, Ian dan William Gasarch. 2002. Problems on Algorithms. Texas: Prentice Hall Inc.