

Department of Mathematics
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Course	Course Name : Design and Analysis of Algorithm
	Course Code : KM184826
	Credit : 2
	Semester : 8

Description of Course	
<p>This course include how to transform the problem into input, process and output of a program. This course equips ways of designing an algorithm on a problem and performs an analysis of the algorithm created so that it can choose the right algorithm to be implemented into the program. The problems that often arise in computing will be examples of case discussions, such as problems in searching, sorting, matrix operations, graphs, and optimization problems.</p>	
Learning Outcome	
PLO 3	[C4] Students are able to analyze simple and practical problems in at least one field of analysis, algebra, modeling, system optimizations and computing sciences
PLO 4	[C5] Students are able to work on a simple and clearly defined scientific task and explain the results, both written and verbally either on the area of pure mathematics or applied mathematics or computing sciences
Course Learning Outcome	
<ol style="list-style-type: none"> 1. The students are able to solve and provide alternative solutions in programming problems with algorithm approach and data structures, individually or in teamwork 2. The students understand the basics of algorithm design to build a correct and efficient algorithm 	

<p>3. The students understand the basics of algorithm analysis, include time computation and memory requirements</p> <p>4. The students understand and are able to implement graph algorithms.</p> <p>5. The students understand and are able to implement optimization programming algorithms.</p> <p>6. The students are able to explain and analyze sorting and searching algorithms and use the appropriate methods</p> <p>7. The students are able to solve programming problems by utilizing the algorithm and analyze it intelligently and creatively.</p>
<p>Main Subject</p>
<p>Algorithm design, algorithmic analysis, searching, sorting, matrix algorithms, graph algorithms, dynamic programming, Greedy algorithm, evolutionary algorithm and case studies</p>
<p>Prerequisites</p>
<p>Matematika Diskrit Algoritma dan Pemrograman Pemrograman Berorientasi Objek</p>
<p>Reference</p>
<p>1. <u>Sara Baase</u> and Allen Van Gelder, <u>Computer Algorithms: Introduction to Design and Analysis 3rd Ed.</u>, Addison-Wesley, 2000.</p> <p>2. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, Introduction to Algorithms, 3rd ed. , MIT Press, 2009.</p>
<p>Supporting Reference</p>
<p>1. Clifford A. Shaffer, Data Structures and Algorithm Analysis, Java edition, Prentice Hall 2013</p>