

MODULE HANDBOOK
Master Program in Computer Science
Department of Computer Science and Electronics
Faculty of Mathematics and Natural Sciences
Universitas Gadjah Mada

Analysis of Algorithm

Module name	Analysis of Algorithm		
Module level	Master		
Code	MII-5011		
Courses (if applicable)	Analysis of Algorithm		
Semester	Odd (Ganjil)		
Contact person	Retantyo Wardoyo, Ph.D.		
Lecturer	Dr. Nur Rokhman Dr. Suprpto Anny Kartika Sari, Ph.D.		
Language	Bahasa Indonesia		
Relation to curriculum	Master Program, compulsory, 1 st semester.		
Type of teaching, contact hours	Master program: lectures < 17 student, Wednesday, 10:00 - 12:00		
Workload	1. Lectures: 3 x 50 = 150 minutes (2.5 hours) per week. 2. Exercises and Assignments: average 15 minutes per week as class exercise or homework, included. 1. Private study: 3 x 60 = 180 minutes (3 hours) per week.		
Credit points	3 credit points (SKS).		
Requirements according to the examination regulations	A student must have registered for the course.		
Recommended prerequisites	-		
Learning outcomes and their corresponding PLOs	Course Learning Outcome (CO)	Description	Supported Program Learning Outcome (PLO)
	CO-1	Ability to apply solution of Linear Equation Systems methods, series, and recurrence method.	PLO-2
	CO-2	Apply to apply the theory of time computation of algorithms.	PLO-3, PLO-7
	CO-3	Ability to explain and compute algorithm complexity using asymptotic notation	PLO-3
	CO-4	Ability to apply abstract data type (stack, queue, etc).	PLO-4, PLO-5
	CO-5	Ability to apply divide and conquer methods.	PLO-4
	CO-6	Ability to apply and analyse optimization algorithms..	PLO-5, PLO-6

	CO-7	Ability to solve complex algorithm problems.	PLO-7, PLO-8, PLO-9			
Content	Analysis of Algorithm is a very important course in computer science, especially to determine the efficiency of an algorithm. By analysing the various algorithms, we can choose the most efficient algorithms in terms of space and time. In this course, they will be discussed, among others, mathematics basics for computing time complexity, asymptotic notation, use of abstract data types to support algorithm optimisation, divide and conquer concepts, and optimisation theory.					
Study and examination requirements and forms of examination	Mid-terms examination and Final examination.					
Media employed	LCD, blackboard, and websites.					
Assessments and Evaluation	CO	Method	Supported PLO	Type of test	Percentage	Subtotal
	CO-1	Problem 1 Midtest	PLO-2	Summative	10%	10%
	CO-2	Problem 2 Midtest	PLO-3	Summative	10%	15%
		Quiz 1	PLO-7	Formative	5%	
	CO-3	Problem 3 Midtest	PLO-3	Summative	10%	10%
	CO-4	Problem 4 Midtest	PLO-4	Summative	10%	15%
		Quiz 2	PLO-5	Formative	5%	
	CO-5	Problem 1 Final test	PLO-4	Summative	5%	5%
	CO-6	Problem 2 Final test	PLO-5	Summative	10%	35%
		Problem 3 Final test	PLO-4	Summative	5%	
		Problem 4 Final test	PLO-5	Summative	10%	
		Quiz 3	PLO-6	Formative	10%	
	CO-7	Quiz 4	PLO-7	Formative	10%	10%
Reading List	<ul style="list-style-type: none"> - Arora, A., Analysis and Design of Algorithms 2nd Edition, Cognella Academic Publishing, 2014. - Cormen, T.H., Leiserson, C.E., Rivest, R.L., and Stein, C., Introduction to Algorithms, 3rd Edition, MIT Press, 2009. - V. Aho, A., D. Ullman, J., E. Hopcroft, J., Data Structures and Algorithms, Pearson, 1983. - Brassad, G., Fundamentals of Algorithmics, Pearson, 1995. 					