UNDERGRADUATE PROGRAM IN COMPUTER SCIENCE
DEPARTMENT OF COMPUTER SCIENCE AND ELECTRONICS
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
UNIVERSITAS GADJAH MADA

Module name	**Capita Selecta of Algorithm and Computation**	
Module level	Undergraduate	
Code	MII - 4220	
Courses (if applicable)	Capita Selecta of Algorithm and Computation	
Semester	Spring (Genap)	
Contact person	Janoe Hendarto, M.Kom., Drs.	
Lecturer	Janoe Hendarto, M.Kom., Drs.	
Language	Bahasa Indonesia	
Relation to curriculum	1. Undergraduate degree program, elective, 4^{th} or 6^{th} semester. 2. International undergraduate program, elective, 4^{th} or 6^{th} semester.	
Type of teaching, contact hours	1. Undergraduate degree program: lectures, < 60 students, 2. International undergraduate program: lectures, < 30 students.	
Workload	1. Lectures: 3 x 50 = 150 minutes (2.5 hours) per week. 2. Exercises and Assignments: 3 x 60 = 180 minutes (3 hours) per week. 3. 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 attended at least 75% of the lectures to sit in the exams.	
Recommended prerequisites	Computer Graphics	
Learning outcomes and their corresponding PLOs	After completing this module, a student is expected to:	
	LO1 Students should be knowledgable in the basic concept and theories about fractal geometry and chaos theory.	**PLO3**
	LO2 Students should be knowledgable in the basic concept and theories about Iterated Function System and Attractors also the fractal dimension.	**PLO3**
	LO3 Students should be knowledgable about fractal interpolation and fractal data compression.	**PLO3**

	LO4 Students should be able to analyze, design, and implement a graphical model of real world objects or natural objects.	**PLO4**
	LO5 Students should be able to create fractal based graphics/animation application.	**PLO5**
Content	This course is one of the selective course that have flexibility for its material or learning source. In this course we could discuss based on the latest topics or topics that are in need. The Capita Selecta of Algorithm and Computation course basically covers the area of Fractal, a slightly new area that considered to be developing quite fast and also advancing from the Computer Graphics Course. This course is designed to provide the knowledge and skills for the students to be able to create a program for generating natural objects.	
Study and examination requirements and forms of examination	Mid-terms examination and Final examination.	
Media employed	LCD, whiteboard, handouts and websites.	
Assessments and Evaluation	**LO1**: Problem 1 in midterm (5%), and assignment 1 (5%). **LO2**: Problem 2 & 3 in midterm (10%), and assignment 2 (5%). **LO3**: Problem 4 & 5 in midterm (10%), problem 1 in final exam (5%), and assignment 3; create computer program for generating fractal object (10%). **LO4**: Problem 2 & 3 in final exam (10%), and assignment 4 (10%). **LO5**: Problem 4 & 5 in final exam (10%), and final project (15%).	
Reading List	**WA :** Fractal Vision : Put Fractals to Work for You, Dick Oliver, 1992 **WB** : Fractal Everywhere, Michael Barnsley, 1988 **AA** : Fractal Geometry, Kenneth Falconer, 1990 **AB** : Real-World Fractals, Finlay, M. dan Banton, K., 1993	