UNDERGRADUATE PROGRAM IN COMPUTER SCIENCE
DEPARTMENT OF COMPUTER ENGINEERING
FACULTY OF INTELLIGENT ELECTRICAL AND INFORMATICS TECHNOLOGY

Module name	**Cluster and Multiprocessor Computing**	
Module level	Undergraduate	
Code	EC184904	
Courses (if applicable)	Cluster and Multiprocessor Computing	
Semester	Elective	
Contact person	Mochamad Hariadi, Ph.D	
Lecturer	Mochamad Hariadi, Ph.D	
Language	Indonesia	
Relation to curriculum	Undergraduate degree program, elective semester.	
Type of teaching, contact hours	Lecture, < 60 students, 170 minutes * SKS	
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.	
Mandatory prerequisites	• Computer System Organization and Architecture • Data Structures and Analysis of Algorithms	
Learning outcomes and their corresponding PLOs	CLO-1 Students are able to explain that the hardware components of cluster and Multiprocessor Computing.	PLO-3
	CLO-2 Students are able to explain that the CPU can be clustered and managed	PLO-3 PLO-4
	CLO-3 Students are able to explain the various I/O processes in the	PLO-3
	CLO-4 Students are able to explain engineering techniques that can be applied to the system	PLO-5
	CLO-5 Students are able to implement parallel programming to solve computational problems	PLO-6
Content	In this course, students will learn about parallel methods used to solve computational problems. Students will be faced with basic concepts of parallel programming and methods that can be used to solve computational problems. Topics that will be learn are multiprocessor computer architecture, PRAM, program optimization	

	with cache, shared memory, MPI, map/reduce, method merge, and parallel computational cases.
Study and examination requirements and forms of examination	• In-class exercises • Quiz 1 and 2 • Assignment 1, 2, 3 • Mid-term examination • Final examination
Media employed	LCD, whiteboard, websites (myITS Classroom).
Assessments and Evaluation	CO-1: Question no 1 in midterm exam (15%) CO-2: Question no 2 in midterm exam (15%) CO-3: Question no 3 in midterm exam (10%), quiz 1 (5%) CO-4: Assignment 1 (5%), question no 4 in midterm exam (15%), Quiz 2 (5%) CO-5: Question no 1 in final exam (15%), question no 2 in final exam (15%)
Reading List	Main Peter Pacheco, "An Introduction to Parallel Programming", Morgan Kaufmann, 2011. Proponent Georg Hager dan Gerhard Wellein, “Introduction to High Performance Computing for Scientists and Engineers (Chapman & Hall/CRC Computational Science)”, CRC Press, 2010.