Computer Architecture

Module name	Computer Architecture	
Module level	Undergraduate	
Code	IF221101	
Courses (if applicable)	Computer Architecture	
Semester	1	
Lecturer	Andreas Nugroho S, S.Kom, M.Kom (PIC) Firza Prima Aditiawan, S.Kom., MTI Eka Prakarsa Mandyartha, ST, M.Kom Dr. Eng. Ir. Dwi Arman Prasetya, ST., MT., IPU	
Language	Bahasa Indonesia and English	
Relation to curriculum	Undergraduate degree program; compulsory; 1st semester	
Type of teaching, contact hours	Lectures, < 60 students	
Teaching Methods	Discussion group, case study, collaborative-learning, cooperative learning, problem-based learning	
Workload	1. Lectures: 3 sks x 50 = 150 minutes (2 hours 30 minutes) 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 80% of the lectures to sit in the exams.	
Mandatory prerequisites	-	
Courses description	In this course, students learn basic operation of computer, the organization and function of each component as well as the concept of pipelining as one type of paralllel processing, sequence of execution of the instruction, I/O, operating system support, basic concepts of high performance computer architecture.	
Learning outcomes and their corresponding PLOs	After completing this module, a student is expected to:	
	CO1 Accuracy in explaining the relationship between computer organization and computer architecture, both in terms of the required software and hardware components in a computer system, either through individual work or as part of a team collaboration.	PLO5, PLO8
Content	The basics of computer operation, the components that make up a computer and their functions, the sequence of executing an instruction, I/O (Input/Output), operating system support, the fundamental concept of high-performance computer architecture, which includes RISC and pipelining.	
Media employed	LCD, whiteboard, websites, books (as references), online meeting, etc.	
Assessments and Evaluation	One written Midterm assessment (60 minutes) and one final oral exam (30 minutes), two short computer-based quizzes, takehome written assignments	
Study and examination requirements and	The final grade in the module is composed of: • Two short computer-based quizzes: 15% x 2 = 30% • Take-home written assignments: 15%	

forms of examination	• Written Midterm assessment: 25% • Final oral exam: 30% Students must have a final grade of 55.6% or higher to pass.
Reading List	● W. Stallings, Computer Organization And Architecture - Designing For Performance, 11 Global Edition. Pearson, 2022. ● D. Patterson and J. Hennessy, Computer Organization and Design MIPS Edition: The Hardware/Software Interface 6. Morgan Kaufman Publisher, 2022. ● J.L. Hennessy, D.A. Patterson, and C.Kozyrakis, Computer Architecture: A Quantitative Approach (The Morgan Kaufmann Series in Computer Architecture and Design), 7th Edition. Morgan Kaufmann, 2025. ● A. Grama, A.H. Sameh, Parallel Algorithms in Computational Science and Engineering, 1st ed. Birkhäuser, 2000. ● M. M. Hassani, H. Barjesteh, M. Mehdi, Computer fundamentals : English for computer engineering. Arcler Press, 2024. ISBN: 9781774699232. [Online]. Available: https://portal.igpublish.com/iglibrary/obj/ARCLER0001391?searchid=1754987548017r7vL9ePi_nkZPIHzcPnf4