

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

Module name	Computer Organization and Architecture															
Module level	Undergraduate															
Code	MII-2603															
Courses (if applicable)	Computer Organization and Architecture															
Semester	Odd (Gasal)															
Contact person	Drs. Abdul Ro'uf, M.I.Kom															
Lecturer	Drs. Abdul Ro'uf, M.I.Kom															
Language	Bahasa Indonesia and English															
Relation to curriculum	Undergraduate degree program, mandatory, 3th, 5th or 7th semester.															
Type of teaching, contact hours	Undergraduate degree program: lectures, 33 students, Sunday, 10:30 - 13:00 Room S1.202															
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																
Learning outcomes and their corresponding PLOs	<p>After completing this module, a student is expected to:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">CO1</td> <td style="width: 80%;">Be able to explain the basic concepts of computer organization and architecture as well as the development of computer design.</td> <td style="width: 15%; text-align: right;">PLO2</td> </tr> <tr> <td>CO2</td> <td>Be able to explain the main components of the computer as well as its function</td> <td style="text-align: right;">PLO3</td> </tr> <tr> <td>CO3</td> <td>Be able to explain the inner structure of the processor.</td> <td style="text-align: right;">PLO3</td> </tr> <tr> <td>CO4</td> <td>Be able to explain the concept of the control unit in the processor</td> <td style="text-align: right;">PLO3</td> </tr> <tr> <td>CO5</td> <td>Be able to explain the concept of multicore computer</td> <td style="text-align: right;">PLO3</td> </tr> </table>	CO1	Be able to explain the basic concepts of computer organization and architecture as well as the development of computer design.	PLO2	CO2	Be able to explain the main components of the computer as well as its function	PLO3	CO3	Be able to explain the inner structure of the processor.	PLO3	CO4	Be able to explain the concept of the control unit in the processor	PLO3	CO5	Be able to explain the concept of multicore computer	PLO3
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Content	This course contains the structure and function of the computer, explaining clearly and completely the parts of the computer system and its functions. This task is very challenging for several reasons. First, there are various products called computers, from one chip computer worth tens of thousands of dollars to super computers worth tens of billions of dollars. Variations are not only based on price but also size, performance, and application. In addition, the rapidly changing speed of its technology enables the use of billions of transistors in a single chip, thereby inducing a parallel system. This course seeks to present the basics of computer															

	<p>organization and architecture and the direction of its progress. In this lecture discussed:</p> <ol style="list-style-type: none"> Computer system with main components of processor, memory and Input / Output. The processor, with the main components of the control unit, registers, counting units and instructions. The control unit, with tasks for managing memory, microstructures / microarchitecture and registers. Parallel / multicore system 																																																												
Study and examination requirements and forms of examination	Midterms examination and Final examination.																																																												
Media employed	LCD, blackboard, websites, simulator.																																																												
Assessments and Evaluation	<table border="1"> <thead> <tr> <th>CO</th> <th>Evaluation Method</th> <th>Type</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>CO1</td> <td>Task 1 – Computer generations</td> <td>formatif</td> <td>5%</td> </tr> <tr> <td></td> <td>Problem no 1 UTS</td> <td>summatif</td> <td>7.5%</td> </tr> <tr> <td>CO2</td> <td>Task 2 – Instruction Cycle</td> <td>formatif</td> <td>5%</td> </tr> <tr> <td></td> <td>Problem no 2 UTS</td> <td>summatif</td> <td>7.5%</td> </tr> <tr> <td>CO3</td> <td>Task 3 – Case study</td> <td>formatif</td> <td>5%</td> </tr> <tr> <td></td> <td>Problem no 3 UTS</td> <td>summatif</td> <td>7.5%</td> </tr> <tr> <td></td> <td>Problem no 4 UTS</td> <td>summatif</td> <td>7.5%</td> </tr> <tr> <td>CO4</td> <td>Problem no 1 UAS</td> <td>summatif</td> <td>10%</td> </tr> <tr> <td></td> <td>Problem no 2 UAS</td> <td>summatif</td> <td>10%</td> </tr> <tr> <td></td> <td>Task 4 – Case study</td> <td>formatif</td> <td>5%</td> </tr> <tr> <td>CO5</td> <td>Problem no 3 UAS</td> <td>summatif</td> <td>10%</td> </tr> <tr> <td></td> <td>Problem no 4 UAS</td> <td>summatif</td> <td>10%</td> </tr> <tr> <td></td> <td>Task 5 – Case study</td> <td>formatif</td> <td>5%</td> </tr> <tr> <td></td> <td>Activity in the Classroom</td> <td>Attendance, working on the quiz in front of the class</td> <td>5%</td> </tr> </tbody> </table>	CO	Evaluation Method	Type	Percentage	CO1	Task 1 – Computer generations	formatif	5%		Problem no 1 UTS	summatif	7.5%	CO2	Task 2 – Instruction Cycle	formatif	5%		Problem no 2 UTS	summatif	7.5%	CO3	Task 3 – Case study	formatif	5%		Problem no 3 UTS	summatif	7.5%		Problem no 4 UTS	summatif	7.5%	CO4	Problem no 1 UAS	summatif	10%		Problem no 2 UAS	summatif	10%		Task 4 – Case study	formatif	5%	CO5	Problem no 3 UAS	summatif	10%		Problem no 4 UAS	summatif	10%		Task 5 – Case study	formatif	5%		Activity in the Classroom	Attendance, working on the quiz in front of the class	5%
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Reading List	<p>Stallings, W., Computer Organization and Architecture, 9th Ed., Prentice Hall, 2013. Tanenbaum, A.S. & Austin, T., Structured Computer Organization, 6th-ed, Prentice Hall, Inc., New Jersey, 2012 Mano, M., Computer System Architecture, 3th Edition, Addison-Wesley, 2007. Hannesy, J.,L., Computer Architecture, 5th Edition, Elsevier, 2012</p>																																																												