Module Description

Module name	Embedded System
Module level, if applicable	Bachelor of Informatics
Code, if applicable	21D12131604
Subtitle, if applicable	-
Course, if applicable	-
Semester(s) in which the module is taught	6th
Person responsible for the module	Ir. Christoforus Yohannes., MT
Lecturer	1. Ir. Christoforus Yohannes., MT 2. Adnan., ST., MT., PhD
Language	Indonesian Language [Bahasa Indonesia]
Relation to Curriculum	This course is a compulsory course for the Internet of Things research group and is offered in the 6th semester.
Type of teaching, contact hours	Teaching methods: [group discussion], [simulation], [case study], [collaborative learning], [project-based learning], [problem-based learning]. Teaching forms: [lecture], [tutorial]. CH : 08.00 - 16.00
Workload	For this course, students are required to meet a minimum of 181.33 hours in one semester, which consist of: - 53.33 hours for lecture, - 64 hours for structured assignments, - 64 hours for private study,

Credit points	4 credit points (equivalent with 6.8 ECTS)
Requirements according to the examination regulations	Students have participated in at least 80% of the learning activities (Academic Regulations, Chapter VII)
Recommended prerequisites	-
Module objectives/intended learning outcomes	After completing the course, Students are able: **Intended Learning Outcomes (ILO):** **ILO 3 :** Apply the knowledge of computing and other related disciplines to analyse and identify solutions for any computing-based problem. **ILO 7 :** Perform a logical systematic procedure to solve problems, then communicate their ideas in a convincing and effective manner, either in written or orally, to propose solutions. **ILO 8 :** Aware of the dynamics of Information Technology and acknowledge the different points of view of others that includes beliefs, cultures, ideas and original inventions. **Course Learning Objective (CLO):** After attending the Embedded Systems course for 1 (one) semester, students are able to use theoretical concepts and practical knowledge in the field of Embedded Systems independently, of good quality and measurable and able to analyze and design embedded systems projects. In the Embedded System students can formulate the theory of the embedded system and apply it practically in the form of projects. **Sub CLO :** ILO 3 ⇒ CLO 1: Students are able to explain the basics and detailed concepts of the Embedded System, Microcontroller and Microcontroller Architecture, Sensors, Electric Motors, and Real Time Operating System (RTOS). ILO 8 ⇒ CLO 2: Students understand about ESP Microcontroller. ILO 7 ⇒ CLO 3: Students are able to create an embedded system project.
Content	Students will learn about : 1. Embedded System

	2. Subsystems, Standalone Systems, Networked Systems 3. User Interface 4. Application Specific Integrated Circuit 5. Microcontroller 6. Reduced Instruction Set Computer and Complex Instruction Set Computer 7. Sensors 8. Thermocouple 9. Electric Motors 10. ESP Microcontroller 11. Real Time Operating System (RTOS) 12. Controller Process 13. CODEC
Forms of Assessment	Assessment techniques: [observation], [participation], [performance], [written test], [oral test]. Assessment forms: [midterm exam], [final term exam], [assignment]. CLO 1 ILO 3 : 35pt midterm exam + 35pt Final term exam CLO 2 ILO 8 : 10pt Assignment CLO 3 ILO 7: 10pt Assignment + 10pt Observation
Study and examination requirements and forms of examination	**Study and examination requirements:** - Students must attend 15 minutes before the class starts. - Students must switch off all electronic devices. - Students must inform the lecturer if they will not attend the class due to sickness, etc. - Students must submit all class assignments before the deadline. - Students must attend the exam to get a final grade. **Form of examination:** Written exam: Essay
Media employed	Video conference, slide presentation, Learning Management System (LMS)
Reading list	**Main :** 1. Widodo Budiharto, "Elektronika Digital dan Sistem Embedded", Andi, 2018