

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

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| Module name | Embedded System and Lab | |
| Module level | Undergraduate | |
| Code | EC184603 | |
| Courses (if applicable) | Embedded system and Lab | |
| Semester | 6 / Spring (Genap) | |
| Contact person | Eko Pramunanto, S.T, M.T. | |
| Lecturer | Eko Pramunanto, S.T, M.T. | |
| Language | Indonesia / English | |
| Relation to curriculum | Undergraduate degree program, mandatory, 6 th semester. | |
| Type of teaching, contact hours | Lecture and Laboratory activity, < 60 students, 170 Minutes * SKS | |
| Workload | <ol style="list-style-type: none"> 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. 4. Laboratory activities 1 x 60 = 60 minute (1 hour) per week. | |
| Credit points | 4 credit points (sks). | |
| Requirements according to the examination regulations | A student must have attended at least 75% of the lectures, all laboratory assignment, and exams. | |
| Mandatory prerequisites | Digital Circuit and Lab, Microprocessor and Microcontroller System, Computer Architecture | |
| Learning outcomes and their corresponding PLOs | <p>CLO 1 Students are able to understand, analyze, and explain the basic building blocks of embedded systems hardware.</p> <p>CLO 2 Students are able to describe the hardware and software architecture of processors used in embedded systems.</p> <p>CLO 3 Students are able to perform measurements and troubleshoots in digital systems.</p> <p>CLO 4 Students are able to use embedded system development platforms and environments.</p> <p>CLO 5 Students are able to develop experience in assembler and C programming languages.</p> <p>CLO 6 Students are able to specify relevant embedded systems requirements such as memory, processor speed, and energy consumption.</p> <p>CLO 7 Students are able to build embedded systems solutions with the help of common hardware interface units.</p> | <p>PLO-4</p> <p>PLO-4</p> <p>PLO-5</p> <p>PLO-6</p> <p>PLO-6</p> <p>PLO-5</p> <p>PLO-6</p> <p>PLO-5</p> <p>PLO-6</p> <p>PLO-9</p> |

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| | CLO 8 Students are able to develop documentation and presentation skills. | PLO-9 |
| Content | Students understand the concept and design of embedded systems. Students are familiar with processor and peripheral systems (input and output) related to embedded systems, and embedded systems programming languages. | |
| Study and examination requirements and forms of examination | <ul style="list-style-type: none"> • In-class exercises • Quiz 1 and 2 • Laboratory Assignment 1, 2, 3, 4 • Mid-term examination • Final examination | |
| Media employed | LCD, whiteboard, websites (myITS Classroom), Embedded System Laboratory | |
| Assessments and Evaluation | CO-1: Question no 1 in midterm exam (5%) CO-2: Question no 2 in midterm exam (5%) CO-3: Assignment 1 (5%), question no 4 in midterm exam (10%), Quiz 2 (5%) CO-4: Question no 1 in final exam (5%), question no 2 in final exam (5%) CO-5: Assignment 2 (5%), question no 3 in final exam (5%) CO-6: Assignment 3 (5%), question no 4 in final exam (5%) CO-7: Assignment 4 (10%), question no 4 in final exam (10%) CO-8: Assignment 4 (10%), question no 5 in final exam (10%) | |
| Reading List | <ol style="list-style-type: none"> 1. Richard F Thinder, "Digital Engineering Design" 2nd edition, Prentice_Hall International, 1991 2. Muhammad Ali Mazidi, "The AVR Microcontroller And Embedded System", Pearson Education Inc, 2011 3. Peter Marwedel, "Embedded System Design" 3rd edition, Springer International Publishing AG, 2018 4. Arnold S. Berger, "Embedded Systems Design: An Introduction to Processes, Tools, and Techniques", CMP Books, 2002 5. Steve Heath, "Embedded System Design", The MIT Press Cambridge, Massachusetts London, England, 2001 | |