



UNIVERSITAS GADJAH MADA

Faculty of Mathematics and Natural Sciences

Department of Computer Science and Electronics

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Bachelor in Electronics and Instrumentation

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MODULE HANDBOOK

Module name	Experiment on Microcontroller
Module level, if applicable	Undergraduate
Code, if applicable	MII1308
Courses, if applicable	Experiment on Microcontroller
Semester(s) in which the module is taught	Even semester
Person responsible for the module	Dr. Dyah Aruming Tyas, S.Si.
Lecturer(s)	Dr. Dyah Aruming Tyas, S.Si.
Language	Bahasa Indonesia and English
Relation to curriculum	1. It is a mandatory course for the undergraduate degree program in 2nd semester. 2. It is a mandatory course for the international undergraduate degree program in 2nd semester.
Teaching methods	1. Undergraduate degree program delivered using lectures and practicum instruction with students less than 30. 2. International undergraduate degree program delivered using lectures and practicum instruction with students less than 30.
Workload (incl. contact hours, self-study hours)	1. Lectures: 1 x 100 = 100 minutes per week. 2. Exercises and Assignments: 1 x 50 = 50 minutes per week. 3. Self-study: 1 x 50 = 50 minutes per week.
Credit points	1 Credit Points
Requirements according to the examination regulations	A student must have attended at least 75% of the lectures to sit in the exams.
Required and recommended prerequisites for joining the module	Microcontroller (MII1307)
Learning outcomes and their corresponding PLOs	After completing this module, a student is expected to: CO1 understand basic concepts, digital electronic systems, and how microcontrollers work CO2 master the latest ways of developing microcontroller-based electronic and instrumentation systems. CO3 understand how to translate an electronics and instrumentation problem into a microcontroller-based system design.

	<p>CO4 able and competent to analyze the needs of hardware/software components for the implementation of microcontroller-based system designs.</p> <p>CO5 able and proficient in using microcontroller-based electronic and instrumentation system simulations.</p> <table><tr><th colspan="2">PLO</th><th>CO1</th><th>CO2</th><th>CO3</th><th>CO4</th><th>CO5</th></tr><tr><td rowspan="5">Program Learning Outcome (PLO)</td><td>PLO1</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>PLO2</td><td>√</td><td>√</td><td></td><td></td><td></td></tr><tr><td>PLO3</td><td></td><td></td><td></td><td>√</td><td>√</td></tr><tr><td>PLO4</td><td></td><td></td><td>√</td><td></td><td></td></tr><tr><td>PLO5</td><td></td><td></td><td></td><td></td><td></td></tr></table>	PLO		CO1	CO2	CO3	CO4	CO5	Program Learning Outcome (PLO)	PLO1						PLO2	√	√				PLO3				√	√	PLO4			√			PLO5																																																										
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Content	<ol style="list-style-type: none">1. Introduction to AVR, PIC, and Nuvoton Cortex-M0 Microcontrollers2. I/O concept on AVR, PIC and Nuvoton Cortex-M0 microcontrollers3. Timers, Counters and PWM4. Interrupt and Watchdog Timer Concepts5. Serial Communication Interface6. ADCs7. I2C Communication Interface8. SPI Communication Interface9. CAN Communication Interface																																																																																											
Study and examination requirements and examination forms	<p>The evaluation is done in three forms, namely:</p> <ol style="list-style-type: none">1. Final exam2. Case Study																																																																																											
Media employed	Projector, whiteboard, presentation. And e-learning platform (eLok)																																																																																											
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Reading list	[1] Putra, A.E., 2017, Handout Kuliah Mikrokontroler ARM Cortex M0 versi 2017 , Lab. Sistem Komputer dan Jaringan, Departemen Ilmu Komputer dan Elektronika, Fak. MIPA, UGM, Yogyakarta.																																																																																											

	<p>[2] Nuvoton, 2013, <i>NuMicro™ NUC100 Series NUC130/NUC140 Technical Reference Manual rev 2.05</i>, Nuvoton Technology Corporation, Taiwan.</p> <p>[3] Nuvoton, 2014, <i>Nu-LB-NUC140 User Manual for NuMicro™ NUC100 Series rev 2.0</i>, Nuvoton Technology Corporation, Taiwan</p>
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Created date : December 20 , 2022

Revision date :