



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	Simulation Workshops
Module level, if applicable	Undergraduate
Code, if applicable	MII 2321
Courses, if applicable	Simulation Workshops
Semester(s) in which the module is taught	Odd
Person responsible for the module	Tri Wahyu Supardi, S.Si., M.Cs
Lecturer(s)	Tri Wahyu Supardi, S.Si., M.Cs
Language	English and Indonesia
Relation to curriculum	1. Undergraduate degree program, optional, 3rd semester. 2. International undergraduate program, optional, 3rd semester.
Teaching methods	Case-Based Learning
Workload (incl. contact hours, self-study hours)	1. Lectures: 2 x 50 = 150 minutes per week. 2. Exercises and Assignments: 2 x 50 = 100 minutes per week. 3. Private study: 2 x 50 = 50 minutes per week.
Credit points	2
Requirements according to the examination regulations	Minimum attendance at lectures is 75% (according to UGM regulation). Final score is evaluated based on assignments (20%), mid semester exam (40%), and end semester exam (40%).
Required and recommended prerequisites for joining the module	
Learning outcomes and their corresponding PLOs	After completing this module, a student is expected to: (CO-1): Able to simulate a regulated power supply circuit (CO-2): Able to simulate BJT, FET, Thyristor circuits for DC motor switches (CO-3): Able to simulate electronic circuits using a microcontroller (CO-4): Able to simulate electronic circuits for BLDC, stepper and servo motors controlling

	<table><tr><th colspan="2">PLO</th><th>CO1</th><th>CO2</th><th>CO3</th><th>CO4</th></tr><tr><td rowspan="5">Program Learning Outcome (PLO)</td><td>PLO1</td><td>√</td><td></td><td></td><td></td></tr><tr><td>PLO2</td><td></td><td>√</td><td></td><td></td></tr><tr><td>PLO3</td><td></td><td></td><td>√</td><td></td></tr><tr><td>PLO4</td><td></td><td></td><td></td><td>√</td></tr><tr><td>PLO5</td><td></td><td></td><td></td><td>√</td></tr></table>	PLO		CO1	CO2	CO3	CO4	Program Learning Outcome (PLO)	PLO1	√				PLO2		√			PLO3			√		PLO4				√	PLO5				√																
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Content	<div>1. Introduction to Simulation and introduction to simulation software</div> <div>2. Introduction of DC motors and simple power supplies in simulation software</div> <div>3. Regulated power supply as DC motor controller</div> <div>4. DC Motor Controller Switching (BJT, FET, Thyristor)</div> <div>5. Microcontroller Simulation</div> <div>6. BLDC Motor controller simulation</div> <div>7. Stepper Motor controller simulation</div> <div>8. Speed Servo Motor Controller Simulation</div> <div>9. Position Servo Motor Controller Simulation</div>																																																
Study and examination requirements and examination forms	<div>The evaluation is done in 3 forms, namely:</div> <div>1. Practice</div> <div>2. Report</div> <div>3. Final Exam</div> <div>Assessment is done using benchmark assessment, with the aim of measuring the level of student understanding related to the target and class rank.</div>																																																
Media employed	e-learning Platform, LCD, glass board, and websites.																																																
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Reading list	<div>1. Sadiku, Alexander, 2008: <i>Fundamentals of Electric Circuits</i>, Addison Wesley,</div> <div>2. Edminister, Joseph A, 1983: Teori dan soal-soal Rangkaian Lstrik, edisi kedua, Erlangga, Jakarta</div> <div>3. Schultz, Mitchel E. 2007: <i>Grob’s Basic Electronics, 10th Edition</i>, McGraw-Hill, New York</div> <div>4. Nahvi, Mahmood & Edminister, Joseph A, 2003: <i>Electric Circuits</i>, McGraw- Hill, Singapore</div>																																																

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