UNIVERSITAS GADJAH MADA
Faculty of Mathematics and Natural Sciences
Department of Computer Science and Electronics
Sekip Utara Bulaksumur Yogyakarta 55281 Telp: +62 274 546194 Email: dep-ike.mipa@ugm.ac.id Website: http://dcse.fmipa.ugm.ac.id

Bachelor in Electronics and Instrumentation
Telp : +62 274 546194
Email : kaprodi-s1-elins.mipa@ugm.ac.id
Website : http://dcse.ugm.ac.id/

MODULE HANDBOOK

Module name	**Experiment on Digital Electronics**
Module level, if applicable	Undergraduate
Code, if applicable	MII1306
Courses, if applicable	**Experiment on Digital Electronics**
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	Digital Electronics (MII1301)
Learning outcomes and their corresponding PLOs	After completing this module, a student is expected to: CO1. Able to use basic logic gates in digital electronic circuits CO2. Able to use Boolean Algebra tools, truth tables, Karnaugh maps as a means of developing logic circuits CO3. Able to analyze and synthesize combinational circuits CO4. Able to use universal logic gates (NAND and NOR) to design combinational logic circuits

<table>
<tr><td></td><td>CO.5 understand the use of the types of MSI and PLD that are often used in digital circuits

<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></td></tr>
<tr><td>Content</td><td>1. Introduction to digital circuit and boolean algebra
a. Sistem digital and binary number
b. Boolean algebra and logic gate
2. Gate level minimazation
a. Basic theorems and properties of Boolean Algebra
b. Karnaugh Map
c. Quine Mc Cluesky
3. Combinational circuit
a. Analisis Procedure
b. Design Procedure
c. NAND-NOR Implementation
4. MSI and PLD
a. Decoder and Encoder
b. Demultiplexer and multiplexer</td></tr>
<tr><td>Study and examination requirements and examination forms</td><td>The evaluation is done in three forms, namely:
1. Final exam
2. Case Study</td></tr>
<tr><td>Media employed</td><td>Projector, whiteboard, presentation. And e-learning platform (eLok)</td></tr>
<tr><td>Assessments and evaluation</td><td>
<table>
<tr><th>Type</th><th>Percentage</th><th>CO1</th><th>CO2</th><th>CO3</th><th>CO4</th><th>CO5</th></tr>
<tr><td>Practicum 1</td><td>7</td><td>√</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Practicum 2</td><td>7</td><td>√</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Practicum 3</td><td>7</td><td></td><td>√</td><td></td><td></td><td></td></tr>
<tr><td>Practicum 4</td><td>7</td><td></td><td>√</td><td></td><td></td><td></td></tr>
<tr><td>Practicum 5</td><td>7</td><td></td><td></td><td>√</td><td></td><td></td></tr>
<tr><td>Practicum 6</td><td>7</td><td></td><td></td><td>√</td><td></td><td></td></tr>
<tr><td>Practicum 7</td><td>7</td><td></td><td></td><td>√</td><td></td><td></td></tr>
<tr><td>Practicum 8</td><td>7</td><td></td><td></td><td>√</td><td></td><td></td></tr>
<tr><td>Practicum 9</td><td>7</td><td></td><td></td><td></td><td>√</td><td></td></tr>
<tr><td>Practicum 10</td><td>7</td><td></td><td></td><td></td><td>√</td><td></td></tr>
<tr><td>Case Study</td><td>10</td><td></td><td></td><td></td><td></td><td>√</td></tr>
<tr><td>Final Exam</td><td>20</td><td></td><td></td><td></td><td></td><td>√</td></tr>
<tr><td>Total</td><td>100</td><td></td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
</table>

Reading list	1. Mano, M. M. dan Ciletti, M. D., 2008, Digital Design, Prentice Hall , New Jersey. 2. Tocci, R. J., dkk, 2007,Digital Systems – Principles and Applications, 10 th Edition, Pearson Education.

Created date : December 20 , 2022

Revision date :