

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

Module name	<b>Digital Circuits and Lab</b>	
Module level	Undergraduate	
Code	EC184405	
Courses (if applicable)	Digital Circuits and Lab	
Semester	4 / Spring (Genap)	
Contact person	Ahmad Zaini, S.T, M.Sc.	
Lecturer	Ahmad Zaini, S.T, M.Sc. Ir. Hanny Budinugroho, MT.	
Language	Indonesia	
Relation to curriculum	Undergraduate degree program, mandatory, 4 <sup>th</sup> semester.	
Type of teaching, contact hours	Lecture, < 60 students, 230 MENIT 4 SKS	
Workload	<ol style="list-style-type: none"> <li>1. Lectures: 4 x 50 = 200 minutes (3.3 hours) per week.</li> <li>2. Exercises and Assignments: 4 x 60 = 240 minutes (4 hours) per week.</li> <li>3. Private study: 4 x 60 = 240 minutes (4 hours) per week.</li> </ol>	
Credit points	4 credit points (sks).	
Requirements according to the examination regulations	A student must have attended at least 75% of the lectures to sit in the exams.	
Mandatory prerequisites		
Learning outcomes and their corresponding PLOs	<p>CLO-1 Students are able to explain how SSI digital circuit components work (AND OR, XOR, EQV) as well as MSI and LSI components.</p> <p>CLO-2 Students are able to declare digital circuits into digital functions and, vice-versa, implement digital functions into digital circuits using SSI, MSI, and LSI components.</p> <p>CLO-3 Students are able to manipulate digital functions using Boolean algebra to obtain simple or expanded forms (canonical) to obtain optimal combinational circuits.</p> <p>CLO-4 Students are able to explain how the memory components work (flip flop) and use them to analyze and design synchronous sequential circuits.</p>	<p>PLO-3</p> <p>PLO-5 PLO-6</p> <p>PLO-6</p> <p>PLO-6 PLO-9</p>

Content	In this course, students will learn about digital circuit synthesis and analysis, both combinational and sequential.
Study and examination requirements and forms of examination	<ul style="list-style-type: none"> <li>• In-class exercises</li> <li>• Quiz 1 and 2</li> <li>• Assignment 1, 2, 3</li> <li>• Mid-term examination</li> <li>• Final examination</li> </ul>
Media employed	LCD, whiteboard, websites (myITS Classroom).
Assessments and Evaluation	<p>CO-1: Question no 1 in midterm exam (10%)</p> <p>CO-2: Question no 2 in midterm exam (10%)</p> <p>CO-3: Question no 3 in midterm exam (10%), quiz 1 (5%)</p> <p>CO-4: Assignment 1 (5%), question no 4 in midterm exam (10%), Quiz 2 (5%)</p> <p>CO-5: Question no 1 in final exam (10%), question no 2 in final exam (10%)</p> <p>CO-6: Assignment 2 (5%), question no 3 in final exam (10%)</p> <p>CO-7: Assignment 3 (5%), question no 4 in final exam (5%)</p>
Reading List	<ol style="list-style-type: none"> <li>1. Richard F. Tinder, "ENGINEERING DIGITAL DESIGN", Academic Press – Elsevier, 2000</li> <li>2. John F. Wakerly, "Digital Design: Principles and Practices", Elsevier, 2014</li> </ol>