

### Modul Description

<b>Module name</b>	Course Module
<b>Module level, if applicable</b>	Bachelor of Electronics Engineering
<b>Code, if applicable</b>	5215-033-3
<b>Subtitle, if applicable</b>	-
<b>Course, if applicable</b>	Digital Electronics
<b>Semester(s) in which the module istaught</b>	III
<b>Person responsible for the module</b>	Lecturer of Courses
<b>Lecturer</b>	Drs. Jusuf Bintoro, MT
<b>Language</b>	Indonesian Language [Bahasa Indonesia]
<b>Relation to Curriculum</b>	This course is a compulsory course and offered in the 3 <sup>th</sup> semester.
<b>Type of teaching, contact hours</b>	<p>Teaching methods used in this course are:</p> <ul style="list-style-type: none"> <li>- Lecture (i.e., group investigation, small group discussion, case study, and video-based learning)</li> <li>- Structured assignments (i.e., essays and case study)</li> </ul> <p>The class size for lecture is 30 students. Contact hours for lecture is 27 hours, assignments are 32 hours</p>
<b>Workload</b>	<p>For this course, students required to meet a minimum of 91 hours in one semester, which consist of:</p> <ul style="list-style-type: none"> <li>- 27 hours for lecture,</li> <li>- 32 hours for structured assignments,</li> <li>- 32 hours for private study,</li> </ul>
<b>Credit points</b>	2 credit points (equivalent with 2.88 ECTS)
<b>Requirements according to the examination regulations</b>	Students must have attended all classes and submitted all class assignments that are scheduled before the final tests.
<b>Recommended prerequisites</b>	Students must have attended all classes and submitted all class assignments that are scheduled before the final tests.

<p><b>PLO-CLO-ILO</b></p>	<p>After completing the course and given with this case:</p> <p><b>Course Learning Objectives (CLO1):</b> Mahasiswa mampu memahami manfaat teknologi digital baik secara teoritis maupun praktis (K1) (10)</p> <p><b>Course Learning Objectives (CLO2):</b> Mahasiswa mampu menganalisa rangkaian penggerak pada peralatan elektronika dan elektro yang menggunakan sistem digital sebagai basis kerjanya (K1, S2, S3) (40)</p> <p><b>Course Learning Objectives (CLO3):</b> Mahasiswa mampu membuat rangkaian penggerak pada peralatan elektronika dan elektro yang menggunakan sistem digital sebagai basis kerjanya (K1, K2, S1, S3, C1) (50)</p> <p><b>Program Learning Outcomes (PLO3):</b> Menerapkan kompetensi teknik elektronika untuk memecahkan masalah keteknikan</p> <p><b>Knowledge (K2):</b> Untuk menerapkan prinsip-prinsip teknik elektronik untuk memecahkan masalah dalam sistem teknik elektronik</p> <p><b>Engineering and Education Skill (S1):</b> Mampu merancang prinsip dan aplikasi sistem rekayasa elektronik</p> <p><b>Engineering and Education Skill (S2):</b> Mampu menganalisis prinsip kerja dan penerapan sistem rekayasa elektronik</p> <p><b>Engineering and Education Skill (S3):</b> Mampu mencari alternatif solusi dan pemecahan masalah di bidang teknik elektronika.</p> <p><b>Competence (C1):</b> Menerapkan teknologi baru di bidang rekayasa dengan mempertimbangkan standar teknis, aspek kinerja, keandalan, penerapan, dan keberlanjutan</p>
<p><b>Content</b></p>	<p><b>Students will learn about:</b> Provide a solid basis in utilizing digital technology both theoretically and practically, so that it can be used in analyzing, making drive circuits on electronic and electrical equipment that uses a digital system as a work base. Developments and benefits of Digital Technology, Logic gates using switches, diodes, and transistors, Characteristics of Digital TTL and CMOS ICs, Relationships between TTL and CMOS, Theory and Practice of using TTL and CMOS ICs which include logic gates, Combination of Logic gates, Astable Multivibrators, Monostable, Bistable (Flip-flop), Various Types of Flip-flop, Counter, Register, Adder,</p>

	Subtractor, Multiplexer, Demultiplexer, Comparator, Decoder, Encoder, Reminder (Memory), IC PLA., PAL/GAL as well as A/D and D/ A converter and digital circuit application.
<b>Forms of Assessment</b>	Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Attitude: 5%; General Skills: 5%; Special skill: 20%; Mid Test: 30%; Final Test: 40%
<b>Study and examination requirements and forms of examination</b>	<p><b>Study and examination requirements:</b></p> <ul style="list-style-type: none"> <li>- Students must attend 15 minutes before the class starts.</li> <li>- Students must switch off all electronic devices.</li> <li>- Students must inform the lecturer if they will not attend the class due to sickness, etc.</li> <li>- Students must submit all class assignments before the deadline.</li> <li>- Students must attend the exam to get final grade.</li> </ul> <p><b>Form of examination:</b> Written exam: Essay</p>
<b>Media employed</b>	Direct Whiteboard and Power Point Presentation.
<b>Reading list</b>	<p>Main Reference</p> <ol style="list-style-type: none"> <li>1. Ayers, John E. (2005). Digital Integrated Circuits: Analysis and Design. Boca Raton, London, and Taylor &amp; Francis e-Library.</li> <li>2. Balch, Mark. (2003). Complete Digital Design: A Comprehensive Guide to Digital Electronics and Computer System Architecture. New York: McGraw-Hill</li> <li>3. Tocci, Ronald J. et al. (2007). Digital Systems: Principles and Applications. New Jersey: Pearson Education International.</li> </ol> <p>Supporting Reference</p> <ol style="list-style-type: none"> <li>1. Nahin, Paul J. (2013). The Logician and the Engineer. New Jersey 08540: Princetown University Press.</li> <li>2. Ndjoutche, Tertulien. (2016). Electronics Engineering Series: Digital Electronics</li> <li>3. Sequential and Aritmetic Logic Circuit. Great Britain and the United States:</li> <li>4. TTL dan CMOS data sheet (download internet)</li> <li>5. Other supporting references that can be read are not limited to the author's name; via internet browser (google, etc) and youtube with keywords (Keyword): Digital Electronics or Digital Electronic</li> </ol>