



UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF PHYSICS EDUCATION
PHYSICS STUDY PROGRAM

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Bachelor of Physics

MODULE HANDBOOK

Module name:	Digital Systems
Module level, if applicable:	Bachelor (Undergraduate) Programm
Code:	FSK6312
Sub-heading, if applicable:	-
Classes, if applicable:	-
Semester:	3 th
Module coordinator:	Sumarna, M.Si., M.Eng.
Lecturer(s):	Sumarna, M.Si., M.Eng., Pinaka Elda Swastika, M.Sc.
Language:	Bahasa Indonesia
Classification within the curriculum:	Compulsory Course
Teaching format / class hours per week during the semester:	100 minutes lectures, 100 minutes laboratory activities, and 120 minutes structured activities per week.
Workload:	Total workload is 117 hours per semester which consists of 100 minutes lectures, 100 minutes laboratory activities ,120 minutes structured activities, and 120 minutes individual study per week for 16 weeks.
Credit points:	3 SKS (4.86 ECTS)
Prerequisites course(s):	Analog Electronics (FSK6411)
Course Outcomes	<p>After taking this course the students have ability to:</p> <p>CO1. Memahami postulat, aksioma, teorema, dan dalil dalam aljabar boole dan dapat menerapkannya pada analisis fungsi boole atau rangkaian digital.</p> <p>CO2. Memahami jenis dan fungsi/kegunaan gerbang logika dalam membangun sistem digital.</p> <p>CO3. Memahami prinsip peta Karnaugh dan dapat</p>

	<p>menerapkannya dalam penyederhanaan dan perancangan rangkaian logika.</p> <p>CO4. Memahami prinsip dan kegunaan rangkaian pembanding , penjumlah biner, dan rangkaian kombinasional lainnya.</p> <p>CO5. Memahami cara kerja, sifat dan kegunaan flip-flop dalam rangkaian sekuensial.</p> <p>CO6. Merancang rangkaian pencacah dan register di dalam system digital.</p> <p>CO7. Menganalisis rangkaian digital berdasarkan data hasil pengamatan dan menjelaskan cara kerjanya.</p> <p>CO8. Memahami struktur dan cara kerja mikroprosesor.</p>																			
Content:	<p>Mata kuliah ini mempelajari prinsip-prinsip dasar dari system digital yang mencakup sistem bilangan dan sistem kode, aljabar Boole, gerbang logika, penyederhanaan rangkaian logika (peta Karnaugh), rangkaian kombinasional (pembanding dan penjumlah biner), flip-flop (bistabil), pencacah, register, <i>decoder/</i> demultiplekser dan multiplekser, monostabil, astabil dan picu Schmitt, serta pengantar mikroprosesor.</p>																			
Study / exam achievements:	<p>The final mark will be weight as follow:</p> <table border="1"> <thead> <tr> <th>No</th> <th>CO</th> <th>Assessment Object</th> <th>Assessment Technique</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td rowspan="3">1</td> <td rowspan="3">CO1, CO2, CO3, CO4, CO5, CO6, CO7, and CO8</td> <td>a. Individual Laboratory activities and report</td> <td rowspan="3">Report and written test</td> <td>30%</td> </tr> <tr> <td>b. Mid</td> <td>30%</td> </tr> <tr> <td>c. Final Exam</td> <td>40%</td> </tr> <tr> <td colspan="4">Total</td> <td>100%</td> </tr> </tbody> </table>	No	CO	Assessment Object	Assessment Technique	Weight	1	CO1, CO2, CO3, CO4, CO5, CO6, CO7, and CO8	a. Individual Laboratory activities and report	Report and written test	30%	b. Mid	30%	c. Final Exam	40%	Total				100%
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1	CO1, CO2, CO3, CO4, CO5, CO6, CO7, and CO8	a. Individual Laboratory activities and report	Report and written test	30%																
		b. Mid		30%																
		c. Final Exam		40%																
Total				100%																
Forms of media:	Whiteboard, LCD Projector, Laptop/Computer																			
Literature:	<p>A. Tocci, Ronald J., 1991, <i>Digital System : Principles and Applications</i>, 7/ed, Prentice-Hall International, Inc., New Jersey.</p> <p>B. Sumarna, 2006, <i>Elektronika Digital : Konsep Dasar dan Aplikasinya</i>, Graha Ilmu, Yogyakarta.</p> <p>C. Kleitz, William, 1996, <i>Digital Electronics : A Practical Approach</i>, Prentice-Hall International, Inc., New Jersey.</p> <p>D. Greenfield, Joseph D., 1994, <i>Practical Digital Design Using ICs</i>, 2/ed, Regents/Prentice Hall, Englewood Cliffs,</p>																			

	New Jersey.
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PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
CO1						✓		
CO2						✓		
CO3						✓		
CO4						✓		
CO5						✓		
CO6						✓		
CO7						✓		
CO8						✓		