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:	Analisis Rangkaian Listrik (Electric Circuits Analysis)
Module level, if applicable:	Bachelor Program
Code:	FSK6309
Sub-heading, if applicable:	-
Classes, if applicable:	-
Semester:	1th
Module coordinator:	Sumarna, M.Si., M.Eng.
Lecturer(s):	Juli Astono, M.Si., Dr. Pujianto, Sumarna, M.Si., M.Eng.
Language:	Bahasa Indonesia
Classification within the curriculum:	Compulsary Course
Teaching format / class hours per week during the semester:	150 minutes lectures and 180 minutes structured activities per week.
Workload:	Total workload is 136 hours per semester which consists of 150 minutes lectures, 180 minutes structured activities, and 180 minutes individual work to complete the project per week for 16 weeks.
Credit points:	3 SKS (4.86 ECTS)
Prerequisites course(s):	-
Course Outcomes	Students completing this course would be able to:

<table>
<tr><td></td><td>CO1. memahami cara kerja alat ukur elektrik dasar (voltmeter, ohmmeter, amparemeter, dan osiloskop) dan menggunakannya dengan terampil,
CO2. memahami jenis dan fungsi/kegunaan komponen-komponen elektronik sehingga dapat menggunakan sesuai dengan keperluan,
CO3. memahami konsep rangkaian arus searah / DC,
CO4. menganalisis rangkaian elektronik fungsional,
CO5. memahami konsep rangkaian arus bolak-balik / AC,
CO6. mendesain/merancang dan merealisasikan rangkaian elektronik fungsional (proyek).</td></tr>
<tr><td>Content:</td><td>Mata kuliah ini membahas tentang (1) pengenalan komponen elektronik (resistor, kapasitor, induktor, diode, tansformator, dll.) dan alat ukur elektrik (volt-meter, ohm-meter, ampare-meter, dan CRO/osiloskop), (2) rangkaian arus searah/DC (konsep arus dan tegangan beserta sumbernya, hukum Ohm dan hukum Joule, konfigurasi seri paralel delta-star, hukum Kirchhoff KVL dan KCL, pembagi tegangan/arus dan jembatan Wheatstone), (3) metode analisis rangkaian (mesh/loop/metode Maxwell, node/simpul, Thevenin dan Norton, superposisi), (4) rangkaian arus bolak-balik/AC (tegangan sinusoidal dan sumbernya, nilai rerata dan efektif, faktor daya, impedansi/eksprasi phasor, fungsi eksponensial kompleks, fenomena transient), (5) rangkaian RC, RL, RLC (konfigurasi seri dan parallel, resonansi, dan bandwidth).</td></tr>
<tr><td>Study / exam achievements:</td><td>Assessment is carried out at each meeting by observing the progress of understandings and achievements of each student to realize the chosen system and signal. Each student should present his/her progress in every meeting of each week. At the end of semester each student should present the final report and to demonstrate the performance of the realize system and signal project.
The final grade will be weighted as follow:

<table>
<tr><th>No</th><th>CO</th><th>Assessment Object</th><th>Assessment Technique</th><th>Weight</th></tr>
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	1	CO1 to CO5	Individual Assignments	Presentation of Progress Reports	40%
	2	CO6	The measurement system realized	Presentation of Final Report and The Performance of Measurement System Built	60%
				Total	100%
Forms of media:	Board, LCD Projector, Laptop/Computer, electronic componens, electronics equipment.				
Literature:	1. Boylestad, Robert L., 2007, *Introductory Circuit Analysis*, Eleventh Edition, Upper Saddle River, New Jersey : Pearson Education, Inc. 2. Glisson Jr., Tildon, H., 2011, *Introduction to Circuit Analysis and Design*, Springer, Raleigh, North Carolina. 3. Robins, Allan H. and Miller, Wilhelm C., 2013, *Circuit Analysis : Theory and Practice*, Fifth Eddison, E-Book. 4. Alexander, Charles K. dan Sadiku, Mathew N., 2011, *Fundamentals Of Electric Circuits*, Third Edition, E-Book.				

PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
CO1		✔						
CO2		✔						
CO3			✔					
CO4					✔			
CO5					✔			
CO6						✔	✔	