



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:	Modulation
Module level, if applicable:	Bachelor Programme
Code:	FSK6345
Sub-heading, if applicable:	-
Classes, if applicable:	-
Semester:	
Module coordinator:	Agus Purwanto, M.Sc.
Lecturer(s):	Agus Purwanto, M.Sc.
Language:	Bahasa Indonesia
Classification within the curriculum:	Elective 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:

	<p>CO1. Understand why modulation is needed in communication system</p> <p>CO2. Simulate the amplitude modulated signal</p> <p>CO3. Simulate the frequency modulated signal</p> <p>CO4. Simulate the phase modulated signal</p> <p>CO5. Simulate the modulated digital signal</p> <p>CO6. Design, assembly and realize one modulation system (as the end of semester Project)</p>										
<p>Content:</p>	<p>This course discusses the basic concepts of why modulation is needed on the communication systems, several types of modulation methods, i.e. amplitude modulation, frequency modulation, phase modulation and the modulation of digital signals. Simulation of modulated signals using Matlab is used to strengthen student understanding of modulation theory. In order to apply the knowledge obtained in this course, as the end of semester Project, each student should design, assembly and realize one modulation system on his/her choice.</p>										
<p>Study / exam achievements:</p>	<p>Assessment is carried out at each meeting by observing the progress of understandings and achievements of each student to realize the chosen modulation system. 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 realized modulation system.</p> <p>The final grade will be weighted as follow:</p> <table border="1" data-bbox="636 1528 1445 1879"> <thead> <tr> <th>No</th> <th>CO</th> <th>Assessment Object</th> <th>Assessment Technique</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CO1, CO2, CO3, CO4 and</td> <td>Individual Assignments</td> <td>Presentation of Progress Reports</td> <td>40%</td> </tr> </tbody> </table>	No	CO	Assessment Object	Assessment Technique	Weight	1	CO1, CO2, CO3, CO4 and	Individual Assignments	Presentation of Progress Reports	40%
No	CO	Assessment Object	Assessment Technique	Weight							
1	CO1, CO2, CO3, CO4 and	Individual Assignments	Presentation of Progress Reports	40%							

		CO5			
	2	CO6	The modulation system realized	Presentation of Final Report and The Performance of Modulation System Built	60%
	Total				100%
Forms of media:	Board, LCD Projector, Laptop/Computer				
Literature:	1. Alencar, Marcelo S., Modulation Theory (River Publishers, 2018)				

PLO and CO mapping

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