



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:	Automation
Module level, if applicable:	Bachelor Programme
Code:	FSK6343
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
Prerequisites course(s):	-
Course Outcomes	Students completing this course would be able to:

	<p>CO1. Understand the basic purpose and structure of automatic (feedback) control systems</p> <p>CO2. Identify the generic components of the closed loop control systems</p> <p>CO3. Characterize the sensor as the front end of control system and its feedback circuits</p> <p>CO4. Characterize the comparator component</p> <p>CO5. Characterize the actuator and plant components</p> <p>CO6. Design, assembly and realize one automatic (closed loop) control system (as the end of semester Project)</p>										
<p>Content:</p>	<p>This course discusses the basic concepts of automatic (closed loop) control systems, general components of control systems (in block diagram), sensor characteristics, the need for signal conditioning components in feedback circuits to match to the dimension of input quantity, the characteristics of comparators, and the actuator and plant characteristics. Stressing is placed on the physics underlying the single input single output system. As the end of semester Project, each student should design, assembly and realize one closed loop control 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 closed loop control 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 control system.</p> <p>The final grade will be weighted as follow:</p> <table border="1" data-bbox="610 1682 1417 1885"> <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,</td> <td>Individual Assignments</td> <td>Presentation of Progress</td> <td>40%</td> </tr> </tbody> </table>	No	CO	Assessment Object	Assessment Technique	Weight	1	CO1, CO2,	Individual Assignments	Presentation of Progress	40%
No	CO	Assessment Object	Assessment Technique	Weight							
1	CO1, CO2,	Individual Assignments	Presentation of Progress	40%							

		CO3, CO4 and CO5		Reports	
	2	CO6	The closed loop control system realized	Presentation of Final Report and The Performance of Closed Loop Control System Built	60%
	Total				100%
Forms of media:	Board, LCD Projector, Laptop/Computer				
Literature:	1. Atkinson, P., Feedback Control Theory for Engineers (Springer, 1968)				

PLO and CO mapping

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