UNIVERSITAS GADJAH MADA

Faculty of Mathematics and Natural Sciences

Department of Computer Science and Electronics

Sekip Utara Bulaksumur Yogyakarta 55281 Telp: +62 274 546194 Email: dep-ike.mipa@ugm.ac.id Website: http://dcse.fmipa.ugm.ac.id

Bachelor in Electronics and Instrumentation

Telp   : +62 274 546194
Email   : kaprodi-s1-elins.mipa@ugm.ac.id
Website   : http://dcse.ugm.ac.id/

MODULE HANDBOOK

Module name	**Industrial Instrumentations**
Module level	Undergraduate
Code	MII-2314
Courses (if applicable)	Industrial Instrumentations
Semester	Summer (Even)
Contact person	Dr. R. Sumiharto, S.Si., M.Kom.
Lecturer	Dr. R. Sumiharto, S.Si., M.Kom.
Language	Bahasa Indonesia
Relation to curriculum	1. Undergraduate degree program, compulsory, 2th semester. 2. International undergraduate program, compulsory, 2th semester.
Type of teaching, contact hours	1. Undergraduate degree program: lectures, < 80 students, 2. International undergraduate program: lectures, < 30 students.
Workload	1. Lectures: 2 x 50 = 100 minutes (1 hours 10 menit) per week. 2. Exercises and Assignments: 2 x 50 = 100 minutes per week. 3. Private study: 2 x 50 = 100 minutes per week.
Credit points	2 credit points (sks).
Requirements according to the Examination regulations	A student must have attended at least 75% of the lectures to sit in the exams.
Recommended prerequisites	-
Learning outcomes (course outcomes) and their corresponding PLOs	After completing this module, a student is expected to: CO1 Students understand the basic concepts of industrial instrumentation, diagrams of instrumentation systems, and instrument connections CO2 Students understand the concept of discrete process measurement, discrete control elements and relays, analog electronic instrumentation, pneumatic instrumentation, instrumentation calibration and are familiar with control systems in an industrial instrumentation. As well as the characteristics of each instrumentation device. CO3 Students understand the concepts of continuous pressure measurement, continuous level measurement, continuous temperature measurement, and fluid flow measurement

	continuously.
	CO4 Students are able to analyze and design the needs of sensors and actuators related to instrumentation in the industry. CO5 Students are able to make a simulation of an instrumentation system. <table><tr><th colspan="2">PLO</th><th>CO 1</th><th>CO 2</th><th>CO 3</th><th>CO 4</th><th>CO 5</th></tr><tr><td rowspan="5">Program Learning Outcome (PLO)</td><td>**PLO1**</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>**PLO2**</td><td>√</td><td></td><td></td><td></td><td></td></tr><tr><td>**PLO3**</td><td></td><td>√</td><td>√</td><td></td><td></td></tr><tr><td>**PLO4**</td><td></td><td></td><td>√</td><td>√</td><td></td></tr><tr><td>**PLO5**</td><td></td><td></td><td></td><td></td><td>√</td></tr></table>
Contents	1. Introduction to Industrial Instrumentation 2. Instrumentation system diagrams 3. Instrument Connections 4. Discrete measurements 5. Analog electronic instrumentation 6. Pneumatic instrumentation 7. Instrument Calibration 8. Measurement
Study and examination requirements and forms of examination	The evaluation is done in 3 forms, namely: 1. Trial, either midterm or semester test, 2. Four tasks, individual assignments to be completed within a certain timeframe, and 3. Two quizzes, held on face-to-face, once before midterm exam and once after midterm exam, with a short answer form. Assessment is done using benchmark assessment, with the aim of measuring the level of student understanding related to the target and class rank.
Media employed	LCD, blackboard, and websites.
Assessments and Evaluation	<table><tr><th>Type</th><th>Percentage</th><th>CO1</th><th>CO2</th><th>CO3</th><th>CO4</th><th>CO5</th></tr><tr><td>Quiz</td><td>10 %</td><td>√</td><td>√</td><td>√</td><td></td><td></td></tr><tr><td>Individual Task</td><td>20 %</td><td>√</td><td>√</td><td>√</td><td>√</td><td>√</td></tr><tr><td>Group Task</td><td>20 %</td><td></td><td></td><td>√</td><td>√</td><td>√</td></tr><tr><td>Midterm Exam</td><td>25 %</td><td>√</td><td>√</td><td>√</td><td></td><td></td></tr><tr><td>Final Exam</td><td>25 %</td><td></td><td></td><td>√</td><td>√</td><td>√</td></tr><tr><td>**Total**</td><td>100%</td><td></td><td></td><td></td><td></td><td></td></tr></table>

| Reading List | [1] Tony R. Kuphaldt, Lessons In Industrial Instrumentation, www.Pacontrol.com, 2012
[2] Richard L. Shall, Handbook of Industrial automation,Marcel Dekker , 2000
[3] S. Sen, Industrial Automation and Control, NPTEl, |