UIN SUNAN KALIJAGA YOGYAKARTA
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Undergraduate Programme in Physics

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MODULE HANDBOOK

Module Name	Sensors and Signal Conditioning
Module level, if applicable	Bachelor
Code, if applicable	FIS425025
Subtitle, if applicable	-
Courses, if applicable	Sensors and Signal Conditioning (Sensor dan Pengkondisian Sinyal)
Semester(s) in which the module is taught	5th (fifth)
Person responsible for the module	Chair of Instrumentation Interest Area
Lecturer(s)	Frida Agung Rakhmadi, S.Si., M.Sc and Rochan Rifai, S.Si., M.Sc.
Language	Indonesia
Relation to curriculum	Elective course in the third year (5th semester) Bachelor Degree
Type of teaching, contact hours	200 minutes lectures and 240 minutes structured activities per week.
Workload	Total workload is 181,33 hours per semester, which consists of 200 minutes lectures per week for 14 weeks, 240 minutes structured activities per week, 240 minutes individual study per week, in total is 16 weeks per semester, including mid exam and final exam
Credit points	4
Requirements according to the examination regulations	Minimum attendance 75% All assignments must be submitted before the exam
Recommended prerequisites	No prerequisites stated on
Module objectives/intended learning outcomes	After completing this course, the students: CO 1. Understanding the differences between sensors, transducers, and actuators CO 2. Understanding the principles of physics in sensors CO 3 Understanding various of physical, chemical and biological sensors CO 4 Understanding characteristics of sensors and transducers, and applying and analyzing them CO 5 Understanding types of actuators and their applications CO 6 Understanding analog signal conversion and applying it CO 7 Understanding filter circuits CO 8 Understanding ADC and DAC CO 9 Understanding digital signal processing and applying it
Content	a. Introduction to sensors, transducers and actuators. b. Physics principles in sensors. c. Physics sensors. d. Chemical sensors. e. Biological sensors. f. Characteristics of sensors and transducers g. Types of actuators and their applications. h. Analog signal conversion. i. Filter circuit. j. ADC and DAC.

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	k. 11. Digital signal processing.
Study and examination requirements and forms of examination	The final mark will be weighted as follows:

NO	Assessment methods (components, activities)	Weight (percentage)
1	Final Examination	30%
2	Mid-Term Examination	30%
3	Class Activities : Quiz, Homework, etc.	40%

The final assessment is expressed in the form of a letter value converted from a number value with the following categories:

NO	Number Value	Letter Value	NO	Number Value	Letter Value
1	≥ 95	A	7	65-69.99	B/C
2	90-94.99	A-	8	60-64.99	C+
3	85-89.99	A/B	9	55-59.99	C
4	80-84.99	B+	10	50-54.99	C-
5	75-79.99	B	11	55-34.99	D
6	70-74.99	B-	12	<35	E

Media employed	White-board, Lcd Projector, e-learning (https://daring.uin-suka.ac.id/)
Reading list	1. Fraden, Jacob. 2016. *Handbook of Modern Sensor: Phyisics, Designs, and Applications Fifth Edition*. San Diego, USA. 2. Alan S Morris dan Reza Langari. 2021`. *Measurement and Instrumentation: Theory and Application, Third Edition*. Academic Press.

PLO and CO Mapping

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9
CO 1		√							
CO 2		√							
CO 3		√							
CO 4		√		√					
CO 5		√		√					
CO 6		√		√	√				
CO 7		√		√	√				
CO 8		√							
CO 9		√							