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Undergraduate Programme in Physics

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MODULE HANDBOOK

Module Name	Design and Modelling of Instrumentation
Module level, if applicable	Bachelor
Code, if applicable	FIS424046
Subtitle, if applicable	-
Courses, if applicable	Design and Modelling of Instrumentation
Semester(s) in which the module is taught	4th (fourth)
Person responsible for the module	Chair of Instrumentation Interest Area
Lecturer(s)	Frida Agung Rakhmadi, S.Si., M.Sc
Language	Indonesia
Relation to curriculum	Elective course in the second year (4th 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. Understand the role of measurement systems in the development of physics and types of measurement systems CO 2. Understand the process and matters related to product development CO 3. Understand and apply block and flow diagrams CO 4 Understand and apply software of graphic design and electronic circuits CO 5 Understand and apply simulation software to simulate instrumentation designs CO 6 Understand and apply mathematical modeling to instrumentation systems and implement simulation software CO 7 Apply and represent the design and modeling of instrumentation systems in the form of draft scientific articles
Content	a. The role of measurement systems in the development of physics and types of measurement systems b. The process and matters related to product development c. Block and flow diagrams d. Simulation software to simulate instrumentation designs e. Mathematical modeling to instrumentation systems and simulation software
Study and examination requirements and forms of examination	The final mark will be weighted as follows:

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NO	Assessment methods (components, activities)	Weight (percentage)
1	Final Examination	25%
2	Mid-Term Examination	40%
3	Class Activities : Quiz, Homework, etc.	35%

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	Ernest O Doebelin. 2010. *Instrumentation Design Studies*. CRC Press Sergio Franco. *2015*. Analog Circuit Design: Discrete & Integrated. McGraw-Hill Series in Electrical and Computer Engineering. Morad Fakhfah, 2012. *Design of Analog Circuits through Symbolic Analysis*. Bentam Sciences.

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			√		√	√			