

Module Description

Module name	Physical Electronics Laboratory 2
Module level, if applicable	Bachelor of Science
Code, if applicable	23H02121201
Subtitle, if applicable	-
Course, if applicable	-
Semester(s) in which the module is taught	4 th
Person responsible for the module	Prof. Dr. Arifin, M.T.
Lecturer	1. Prof. Dr. Arifin, M.T.
Language	Indonesian Language [Bahasa Indonesia]
Relation to Curriculum	Bachelor degree program, mandatory, 4 th semester
Type of teaching, contact hours	<p>Teaching methods: [focus group discussion], [simulation], [case study], [collaborative learning], [project-based learning], [problem-based learning].</p> <p>Teaching forms: [lecture], [tutorial], [seminar], [practicum], [research], [internship], [community service]</p> <p>CH: 08.00 - 16.00</p>
Workload	<p>For this course, students are required to meet a minimum of 45.33 hours in one semester, which consist of:</p> <ul style="list-style-type: none"> - 13.33 hours for practice in classroom, - 32.00 hours for private study
Credit points	1 credit points (equivalent with 1.7 ECTS)
Requirements	Students have participated in at least 80% of the learning activities

according to the examination regulations	(Academic Regulations, Chapter VII)
Recommended prerequisites	Basic Physics 2
Module objectives/intended learning outcomes	<p>After completing the course, Students are able:</p> <p>Intended Learning Outcomes (ILO):</p> <p>ILO 4: Students have capability to operate the physical instrumentation in the laboratory and conduct experiments and interpret the result. [ILO 4] – Ab</p> <p>Course Learning Objective (CLO):</p> <ol style="list-style-type: none"> 1. Students are able to understand the working principle of operational amplifiers and apply that knowledge to designing, creating, and analyzing operational amplifier circuits in various configurations. 2. Students are able to comprehend the concept of feedback in electronic circuits, recognize different types of feedback, and apply that knowledge to designing, creating, and analyzing feedback circuits. 3. Students are able to grasp the basic concept of filters in electronic circuits, identify different types of filters, and apply that knowledge to designing, creating, and analyzing filter circuits. 4. Students are able to comprehend the fundamental concept of oscillators in electronic circuits, recognize various types of oscillators, and apply that knowledge to designing, creating, and analyzing oscillator circuits. <p>Sub CLO:</p> <p>ILO 4 \Rightarrow CLO-1: Capable of comprehending, designing, creating, and analyzing inverting amplifier circuits, non-inverting amplifier circuits, and summing amplifier circuits.</p> <p>ILO 4 \Rightarrow CLO-1: Capable of comprehending, designing, creating, and analyzing differential amplifier circuits, buffer amplifier circuits, and instrumentation amplifier circuits.</p> <p>ILO 4 \Rightarrow CLO-1: Capable of comprehending, designing, creating, and analyzing integrator amplifier circuits, differentiator amplifier circuits, and comparator amplifier circuits.</p> <p>ILO 4 \Rightarrow CLO-2: Capable of comprehending, designing, creating, and analyzing feedback amplifier circuits.</p>

	<p>ILO 4 \Rightarrow CLO-3: Capable of comprehending, designing, creating, and analyzing filter circuits.</p> <p>ILO 4 \Rightarrow CLO-4: Capable of comprehending, designing, creating, and analyzing oscillator circuits.</p>
Content	<p>Students will learn about:</p> <ol style="list-style-type: none"> 1. Operational Amplifier 2. Linear Operational Amplifier 3. Nonlinear Operational Amplifier 4. Feedback 5. Filter 6. Oscillator
Forms of Assessment	<p>Assessment techniques: [observation], [participation], [performance], [written test], [oral test], [skill test], [portfolio assessment]</p> <p>Assessment forms: [quiz], [midterm exam], [final term exam], [practice] [practice examination] [assignment], [report], [presentation]</p> <p>Assignment = 12% Practice = 60% Report = 12% Practice examination = 16%</p> <p>CLO 1 \Rightarrow ILO 4: Assignment 1 (2%); Practice 1 (10%); Report 1 (2%) Practice examination number 1 (4%) (Assignment: written text; practice: observation; report: portfolio assessment; practice examination: skill test)</p> <p>CLO 1 \Rightarrow ILO 4: Assignment 2 (2%); Practice 2 (10%); Report 2 (2%); Practice examination number 2 (4%) (Assignment: written text; practice: observation; report: portfolio assessment; practice examination: skill test)</p> <p>CLO 1 \Rightarrow ILO 4: Assignment 3 (2%); Practice 3 (10%); Report 3 (2%) Practice examination number 3 (4%) (Assignment: written text; practice: observation; report: portfolio assessment; practice examination: skill test)</p> <p>CLO 2 \Rightarrow ILO 4: Assignment 4 (2%); Practice 4 (10%); Report 4 (2%) Practice examination number 4 (4%) (Assignment: written text; practice: observation; report: portfolio assessment; practice examination: skill test)</p> <p>CLO 3 \Rightarrow ILO 4: Assignment 5 (2%); Practice 5 (10%); Report 5 (2%) (Assignment: written text; practice: observation; report: portfolio assessment)</p> <p>CLO 4 \Rightarrow ILO 4: Assignment 6 (2%); Practice 6 (10%); Report 6 (2%) (Assignment: written text; practice: observation; report: portfolio assessment)</p>

Study and examination requirements and forms of examination	Laboratory and Practical Examination Requirements: <ul style="list-style-type: none"> - Students are required to be present 15 minutes before the start of the laboratory session. - Students must turn off all electronic devices. - Students should inform the instructor if they cannot attend the laboratory session due to illness or other reasons. - Students must submit laboratory assignments before the deadline. - Students must submit laboratory reports before the deadline. Form of Practical Examination: Oral Test
Media employed	LED, Whiteboard, Learning Management System (SIKOLA)
Reading list	Main: <ol style="list-style-type: none"> 1. Albert Malvino & David Bates, Electronic Principles, 8th Edition, Mc Grw Hill, 2015. 2. Giorgio Rizzoni, Fundamentals of Electrical Engineering, 1st Edition, Mc Graw Hell, 2009. 3. Sutrisno, Elektronika Teori dan Penerapannya, Jilid 1 dan 2, Penerbit ITB, Bandung, 1986. 4. Arifin, Penuntun Praktikum Elektronika Fisis 1, Laboratorium Fisika Elektronika & Instrumentasi FMIPA UNHAS, 2010 Support: <p>Nigel P. Cook, Electronic A complete Course, 2nd Edition, Pearson, 2004.</p>