

Module Description

Module name	Automatic Control
Module level, if applicable	Bachelor of Science
Code, if applicable	23H02132503
Subtitle, if applicable	-
Course, if applicable	-
Semester(s) in which the module is taught	6 th
Person responsible for the module	Dr. Ir. Bidayatul Armynah, M.T.
Lecturer	1. Dr. Ir. Bidayatul Armynah, M.T. 2. Prof. Dr. Arifin, M.T.
Language	Indonesian Language [Bahasa Indonesia]
Relation to Curriculum	Undergraduate degree program, elective, 6 th semester
Type of teaching, contact hours	Teaching methods: [Focus group discussion], [simulation], [case study], [collaborative learning], [project-based learning], [problem-based learning]. Teaching forms: [lecture], [tutorial], [seminar], [practicum], [research], [internship], [community service] CH: 08.00 - 16.00
Workload	For this course, students are required to meet a minimum of 136.00 hours in one semester, which consist of: - 40.00 hours for lecture, - 48.00 hours for structured assignments, - 48.00 hours for private study
Credit points	3 credit points (equivalent with 5.1 ECTS)

Requirements according to the examination regulations	Students have participated in at least 80% of the learning activities (Academic Regulations, Chapter VII)
Recommended prerequisites	Physical Electronics 1, Physical Electronics 2 and Mathematical Physics 1
Module objectives/intended learning outcomes	After completing the course, Students are able: Intended Learning Outcomes (ILO): ILO 1: Students will have relatively deep understood in classical and basic quantum physics. [ILO 1] – Kn ILO 2: Students will be able to use the fundamental principles of physics in modeling and computation to solve the complex physical problem [ILO 2] – Kn Course Learning Objective (CLO): 1. Explaining and applying the fundamentals of control systems. Explaining how control systems can be applied in the industrial field. Sub CLO: ILO 1 $\Rightarrow$ CLO-1: Explaining the basic concept of control systems ILO 1 $\Rightarrow$ CLO-1: Explain and apply the derivation of mathematical modeling in dynamic systems ILO 2 $\Rightarrow$ CLO-2: Describe and apply the effect of control action and automatic control in industry ILO 2 $\Rightarrow$ CLO-1: Describe and apply transient response analysis and steady-state errors in control systems ILO 2 $\Rightarrow$ CLO-1: Describe and apply lucos root analysis in control systems ILO 2 $\Rightarrow$ CLO-1: Explain and apply frequency response analysis in control systems
Content	Students will learn about: 1. Introduction to control systems 2. Mathematical modeling in dynamic systems 3. Basic control actions in industry 4. Transient response analysis and steady-state errors 5. Root locus analysis 6. Frequency response analysis 7. State-space analysis and design

	8. Modeling and simulation of control systems using MATLAB
Forms of Assessment	Assessment techniques: [observation], [participation], [performance], [written test], [oral test] Assessment forms: [quiz], [mid examination], [final examination], [assignment], [report], [presentation] Assignment= 40% Mid examination = 30% Final examination = 30% CLO 1 ⇒ ILO 1: Mid examination number 1 (5%) Mid examination number 2 (5%) (Mid examination: written test) CLO 1 ⇒ ILO 1: Question in Assignment 1 (10%) Mid examination number 3 (5%) Mid examination number 4 (5%) (Assignment: written test and mid examination: written test) CLO 2 ⇒ ILO 2: Question in Assignment 2 (10%) Mid examination number 5 (5%) Mid examination number 6 (5%) (Assignment: written test and mid examination: written test) CLO 1 ⇒ ILO 2: Final examination number 1 (5%) Final examination number 2 (5%) (Final examination: written test) CLO 1 ⇒ ILO 2: Question in Assignment 3 (10%) Final examination number 3 (5%) Final examination number 4 (5%) (Assignment: written test and final examination: written test) CLO 1 ⇒ ILO 2: Question in Assignment 4 (10%) Final examination number 5 (5%) Final examination number 6 (5%) (Assignment: written test and final examination: written test)
Study and examination requirements and forms of examination	Study and examination requirements: - Students must attend 15 minutes before the class starts. - Students must switch off all electronic devices. - Students must inform the lecturer if they will not attend the class due to sickness, etc. - Students must submit all class assignments before the deadline. - Students must attend the exam to get a final grade. Form of examination: Written exam: Essay
Media employed	LED, Whiteboard, Learning Management System (SIKOLA), MATLAB Software

Reading list	Main: 1. Ogata, K, <i>Teknik Kontrol otomatis</i>, terjemahan oleh Leksono,E, jilid 1 dan 2, penerbit erlangga 1991 Support: Matlab software for control applications
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