

Module designation	EE421 Basic Control System		
Semester(s) in which the module is taught	7		
Person responsible for the module	Ahmad Syahril Muharom		
Language	Indonesian		
Relation to curriculum	Elective 1		
Didactic methods	<ul style="list-style-type: none"> <li>- Lecture</li> <li>- Demonstration</li> <li>- Hands-On</li> </ul>		
Workload (incl. contact hours, self-study hours)	<p>Total workload: 136.08 hours</p> <ul style="list-style-type: none"> <li>- 35.01 hours of synchronous lecture.</li> <li>- 84.06 hours of self-study and assignments in the form of essays.</li> <li>- 17.01 hours related to exam and self study</li> </ul>		
Credit points	3 SKS (5.04 ECTS)		
Required and recommended prerequisites for joining the module	-		
Module objectives/intended learning outcomes	Course Learning Outcome	Related ELOs	
		ELO	Performance Indicator
	Students can design control systems.	G	Understand the concept of electronics, analog systems, and digital systems in designing embedded systems.
Content	<p>This course discusses Introduction to Control Systems, Laplace Transform Functions, Basic Control Actions, and Response Controllers, System Stability Analysis, Root Locus Analysis, Mathematical Modeling of Dynamic Systems, Block Diagrams, and Signal Flow Graphs, Transient Response Analysis, Design with Root Locus, Analysis Frequency Response, Control System Design with Frequency response, PID Control.</p> <p>Specifically, this course contains these topics:</p> <ol style="list-style-type: none"> <li>1. Introduction to the control system</li> <li>2. Mathematical models of physical systems</li> <li>3. Differential equations and Laplace transforms in control systems</li> </ol>		

	<ol style="list-style-type: none"><li>4. Control system description</li><li>5. Control system analysis</li><li>6. Root Locus</li><li>7. Root Locus design</li><li>8. Frequency response design</li><li>9. PID control</li></ol>
Examination forms	Written test
Study and examination requirements	The total average score for the assignments (30%), midterm (30%), and final (40%) exams must be more than or equal to 55 (C).
Reading list	<ol style="list-style-type: none"><li>1. Ogata, K., Modern Control Engineering, 5th Edition, Prentice Hall Inc, 2010</li></ol>