MODULE HANDBOOK
Master Program in Computer Science
Department of Computer Science and Electronics
Faculty of Mathematics and Natural Sciences
Universitas Gadjah Mada

Control Systems

Module name	**Control Systems**		
Module level	Master		
Code	MII 6291		
Courses (if applicable)	Control Systems (Sistem Kendali)		
Semester	Odd (Ganjil)		
Contact person	Dr. Agfianto Eko Putra, M.Si. Dr. Suharto		
Lecturer	Dr. Agfianto Eko Putra, M.Si. Dr. Suharto		
Language	Indonesia		
Relation to curriculum	Master program, elective, 2nd semester		
Type of teaching, contact hours	Master program : lectures, <17 student		
Workload	1. Lectures: 3×50 = 150 minutes (2.5 hours) per week 2. Exercises and Assignments: 3×60 = 180 minutes (3 hours) per week 3. Private study: 3×60 = 180 minutes (3 hours) per week		
Credit points	3 credit points (SKS)		
Requirements according to the examination regulations	A student must have attended at least 75% of the lectures to sit in the exams		
Recommended prerequisites	-		
Learning outcomes and their corresponding PLOs	After completing this module, a student is expected to:		
	CO	**Description**	**Supported PLO**
	CO-1	Students are able to analayze the basic concepts of control systems	PLO2
	CO-2	Students are able to apply the time-discrete transfer-function model as a basis for designing a control system	PLO3
	CO-3	Students are able to apply the presentation of minimal space conditions for the TF-SISO model	PLO3

	CO-4	Students are able to apply non-minimal state space (NMSS)	PLO3
	CO-5	Students are able to apply proportional integral plus univariable control	PLO4
	CO-6	Students are able to use proportional integral plus control in the form of a forward path	PLO4
	CO-7	Students are able to demonstrate the proportional integral plus multi variable control	PLO4

Content	This lecture introduces the philosophy of the design of True Digital Control (or TDC) which includes identification of database models (statistics), design of control algorithms, evaluation and implementation of robustness. The treatment of identification and design of stochastic control system exists in one goal to look for these important interdisciplinary relationships: for example, to measure the uncertainty of the model used in sensitivity analysis of closed loop stochastic. In general, the basics of linear state space control theory explained at the beginning of the lecture, with the Non-Minimal State Space (NMSS) design as a main example, are used later to provide an introduction to the next topics in modern control theory.
Study and examination requirements and forms of examination	Mid-term examination Final examination Assignments
Media employed	LCD, blackboard, websites, and books

Assessments and Evaluation

CO	Assessment Methods	Supported PLO	Type	Percentage	Total
CO-1	Assignment 1	PLO2	Formative	5%	10%
	Problem 1 of midterm exam	PLO2	Summative	5%	
CO-2	Assignment 2	PLO2, PLO3	Formative	5%	20%
	Problem 2 of midterm exam	PLO2, PLO3	Summative	15%	
CO-3	Assignment 3	PLO3, PLO4	Formative	5%	15%
	Problem 3 of midterm exam	PLO3, PLO4	Summative	10%	
CO-4	Assignment 4	PLO5, PLO6	Formative	5%	15%
	Problem 1 of final exam	PLO4, PLO5	Summative	10%	
CO-5	Assignment 5	PLO5, PLO6	Formative	5%	20%

		Problem 2 of final exam	PLO5, PLO6	Summative	15%	
	CO-6	Assignment 6	PLO8, PLO9	Formative	5%	20%
		Problem 3 of final exam	PLO9	Summative	15%	
Reading List	• Taylor, C.J., Young, P.C., and Chotai, A., 2013, "True Digital Control: Statistical Modelling and Non-Minimal State Space Design", John Wiley & Sons, Ltd.					