

UNIVERSITAS GADJAH MADA

Faculty of Mathematics and Natural Sciences

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Bachelor in Electronics and Instrumentation

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MODULE HANDBOOK

Module name	Digital Signal Processing 1						
Module level	Undergraduate						
Code	MII-2306						
Courses (if	Digital Signal Processing 1						
applicable)							
Semester	Fall (Even)						
Contact person	Dr. Agfianto Eko Putra, M.Si.						
Lecturer	Dr. Agfianto Eko Putra, M.Si.						
Language	Bahasa Indonesia and English						
Relation to	1. Undergraduate degree program, compulsory, 2th semester.						
curriculum	2. International undergraduate program, compulsory, 2th semester.						
Type of teaching,	1. Undergraduate degree program: lectures, < 60 students,						
contact hours	2. International undergraduate program: lectures, < 30 students.						
Workload	1. Lectures: $2 \times 50 = 100$ minutes (1 hours 10 menit) per week.						
	2. Exercises and Assignments: $2 \times 50 = 100$ minutes per week.						
	3. Private study: $2 \ge 50 = 100$ minutes per week.						
Credit points	2 credit points (sks).						
Requirements	A student must have attended at least 75% of the lectures to sit in the						
according to the	exams.						
Examination							
regulations							
Recommended	-						
prerequisites							
Learning outcomes	After completing this module, a student is expected to:						
(course outcomes)	CO1 Understand the basic concepts of Digital Signal Processing and						
and their	some of its applications.						
corresponding PLOs	CO2 Understand the basic concepts of signals and systems, both continuous and discrete						
	CO3 Understand the basic concepts of discrete LTL signals in the time						
	domain which includes the sampling process block diagrams						
	system representation using difference equations and the primary						
	PSD keys namely convolution and correlation						
	CO4 Understand the Fourier representation to convert a signal from the						
	time domain to frequency. Including 4 kinds of Fourier						
	representation, namely Fourier Series (FS). Fourier Transform						
	(FT), Discrete-Time Fourier Series (DTFS) and Discrete-Time						

	Fou CO5 Une diff CO6 Une (Fi	urier Tra derstand ferential derstand nite Imp	insforr l and a equat l conce pulse R	n (DT pply t ions. epts ar cespon	FT). he Z-T nd be a se) typ	ransfo ble to o be filter	rmatic design	on to s	olve p mplen	orobler nent F	ms in IR
	 CO7 Understand concepts and be able to design and implement IIR (Infinite Impulse Response) type filters. CO8 Understanding the use of Digital Signal Processing in Research 								lR .rch		
	PLO	C	CO1	CO2	CO3	CO4	CO5	CC)6 (CO7	CO8
	Program	PLO1									
	Learning	PLO2							1		
	Outcome (PLO)	PLO3 PLO4					V	√	√		
		PLO5									
Contents	 Basic Concepts of Digital Signal Processing (PSD) Discrete-Time Signals and Systems Discrete-time LTI system Discrete Fourier Transform Z Transform Finite Impulse Response (FIR) Filter Design Infinite Impulse Response (IIR) Filter Design Applications of Digital Signal Processing in Research 										
Study and	The evaluation is done in 3 forms, namely:										
examination	1. Trial, either midterm or semester test,										
requirements and	2. Four tasks, individual assignments to be completed within a certain										
forms of examination	timeframe, and										
	3. Two c	luizzes,	held o	n face	-to-fac	e, onc	e befo	re mic	lterm	exam	and
	once a	after mic	lterm	exam,	with a	short	answe	r form	1.		
	Assessmer	it is don	e usin	g benc	hmark		sment,	with	the an	n of	1 1
	measuring	the leve	el of st	udent	unders	standin	g relat	ted to	the tai	rget ai	id class
	rank.										
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Assessments and		KUUaru,	anu w	cosiic	5.						
Evaluation	Type	F	Percen	CO1	CO2	CO3	CO4	C05	COG	C07	C08
Evaluation	Type	1	tage								
	Quiz		5 %								
	Individual	Task	25 %								
	Group Task	<u>د</u>	0								
	Midterm E	xam	40 %	√	√	√	√	,	,	,	
	Final Exam	<u> </u>	30 %				V	√	N	N	N
	lotal		100%								

Reading List	[1] Gunawan, D. dan Juwono, F.H., 2012, Pengolahan Sinyal Digital
	dengan Pemrograman MATLAB, Graha Ilmu, Yogyakarta;
	[2] Siahaan V, 2020, MATLAB GUI Untuk Pengolahan Sinyal Digital,
	Balige Publishing;.
	[3] Siahaan V. dan Sianipar, R.H., 2020, Pemrograman MATLAB Untuk
	Pengolahan Sinyal Digital, SPARTA Publishing