MODULE HANDBOOK
Fourier and Wavelet Transformation

BACHELOR DEGREE PROGRAM

DEPARTMENT OF MATHEMATICS

FACULTY OF SCIENCE AND DATA ANALYTICS

INSTITUT TEKNOLOGI SEPULUH NOPEMBER

MODULE HANDBOOK

Fourier and Wavelet Transformation

Module name	**Fourier and Wavelet Transformation**
Module level	Undergraduate
Code	KM184814
Course (if applicable)	**Fourier and Wavelet Transformation**
Semester	Spring (Genap)
Person responsible for the module	**Dr. Drs. Mahmud Yunus, M.Si**
Lecturer	**Dr. Drs. Mahmud Yunus, M.Si**
Language	Indonesia and English
Relation to curriculum	Undergraduate degree program, **elective**, 8th semester.
Type of teaching, contact hours	Lectures, <60 students
Workload	1. Lectures : 2 x 50 = 100 minutes per week. 2. Exercises and Assignments : 2 x 60 = 120 minutes (2 hours) per week. 3. Private learning : 2 x 60 = 120 minutes (2 hours) per week.
Credit points	2 credit points (sks)
Requirements according to the examination regulations	A student must have attended at least 80% of the lectures to sit in the exams.
Mandatory prerequisites	Analysis I Analysis II
Learning outcomes and their corresponding PLOs	Course Learning Outcome (CLO) after completing this module, 1. Student can present a function (signal) in Fourier expansion, and can show the accuracy of the presentation 2. Students can apply discrete decomposition/ reconstruction in signal processing, especially in compression process and denoising data / signals
Content	In this course students will learn about linear space, normed space, and inner-product spaces, Fourier series, Fourier transforms, discrete Fourier transforms, and applications. In learning in the classroom students will learn and be equipped to understand and to be able to explain the material taught in accordance with teaching materials, Besides, given the tasks that lead to self-study and group work.

	In this course students will study subjects such as linear space, normed space, and inner result space, Fourier analysis: Fourier series, Fourier transformation, discrete Fourier transformation, and application.
Study and examination requirements and forms of examination	• In-class exercises • Assignment 1, 2 • Mid-term examination • Final examination
Media employed	LCD, whiteboard, websites (myITS Classroom), zoom.
Reading lists	Main: 1. Boggess, A., Narcowich, F. J., "A First Course in Wavelets with Fourier Analysis", Prentice-Hall, New Jersey, 2001. 2. Folland, G. B., "Fourier Analysis and Its Applications",American Mathematical Society., 2009.