MODULE HANDBOOK
NON-LINEAR DIFFERENTIAL EQUATIONS

BACHELOR DEGREE PROGRAM
DEPARTMENT OF MATHEMATICS
FACULTY OF SCIENCE AND DATA ANALYTICS

INSTITUT TEKNOLOGI SEPULUH NOPEMBER

MODULE HANDBOOK
NON-LINEAR DIFFERENTIAL EQUATIONS

Module name	**Non-Linear Differential Equations**
Module level	Undergraduate
Code	KM184714
Course (if applicable)	Non-linear Differential Equations
Semester	Fall (Ganjil)
Person responsible for the module	Dr. Tahiyatul Asfihani, S.Si, M.Si
Lecturer	Dr. Tahiyatul Asfihani, S.Si, M.Si
Language	Indonesia and English
Relation to curriculum	Undergraduate degree program, **elective**, 7th 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	Ordinary Differential Equations
Learning outcomes and their corresponding PLOs	Course Learning Outcome (CLO) after completing this module, CLO-1 Be able to identify natural phenomena that have non-linear differential equations. CLO-2 Be able to analyze the stability and behavior of non-linear dynamic systems based on appropriate methods. CLO-3 Be able to identify the occurrence of bifurcation in non-linear PD systems. CLO-4 Be able to work together in analyzing non-linear PD systems and presenting them in written and oral form well.
Content	This course discusses natural phenomena in the form of nonlinear differential equations, linearity, system stability analysis using various methods, identification of bifurcation.
Study and examination	• In-class exercises • Assignment 1, 2

requirements and forms of examination	• Mid-term examination • Final examination
Media employed	LCD, whiteboard, websites (myITS Classroom), zoom.
Reading list	Main: 1. Verhulst F., “Non-Linier Differential Equation and Dynamical Systems”, Springer, 2013. Supporting: -