MODULE HANDBOOK
NUMERICAL COMPUTING

MASTER DEGREE PROGRAM
DEPARTMENT OF MATHEMATICS
FACULTY OF SCIENCE AND DATA ANALYTICS
INSTITUT TEKNOLOGI SEPULUH NOPEMBER

Module name	**Numerical Computing**
Module level	Postgraduate
Code	KM185104
Course (if applicable)	-
Semester	Fall (Gasal)
Person responsible for the module	Dr. Dwi Ratna Sulistyaningrum, S.Si., M.T.
Lecturer	Dr. Dwi Ratna Sulistyaningrum, S.Si., M.T.
Language	Bahasa Indonesia and English
Relation to curriculum	Master degree program, **mandatory**, 1st semester.
Type of teaching, contact hours	Lectures, <60 students Tuesdays, 11.00-12.50 (GMT+7)
Workload	1. Lectures : 2 x 50 = 100 minutes per week. 2. Exercises and Assignments : 2 x 60 = 120 minutes (2 hours) per week. 1. 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	-
Learning outcomes and their corresponding ILOs	Course Learning Outcome (CLO) after completing this module, • Students are able to analyze errors and convergence of a numerical solution • Students are able to actively construct mathematical problem solving algorithms with some numerical approach

	• Students are able can implement numerical approach to a programming language such as MATLAB to solve some problems in mathematics ● Students are able to apply numerical approach to various multidisciplinary applications in science and technology.
Content	The course gives an opportunity to the students to understand the methods to solve the problems in numerical mathematics. This course discusses the error, interpolation, numerical differentiation and numerical integration, numerical solution of ordinary differential equations (initial value problems), and numerical solution of partial differential equations.
Study and examination requirements and forms of examination	• In-class exercises • Assignment 1, 2, 3 • Mid-term examination ● Final examination
Media employed	LCD, whiteboard, websites (myITS Classroom), zoom.
Reading list	Main : 1. RL Burden and JD Faires, Numerical Analysis, 9th edition, Brooks-Cole, 2. Atkinson Kendall and Weimin Han, Elementary Numerical Analysis, 2nd edition, John Wiley & Sons, Inc. 3. Steven Chapra and Canale, Numerical methods for engineering, 4th edition, McGraw-Hill, 2002 Supporting : 1. -