MODULE HANDBOOK
COMPUTATIONAL ALGORITHM

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

MODULE HANDBOOK
COMPUTATIONAL ALGORITHM

Module name	**Computational Algorithm**
Module level	Postgraduate
Code	KM185231
Course (if applicable)	-
Semester	Spring (Genap)
Person responsible for the module	
Lecturer	
Language	Bahasa Indonesia and English
Relation to curriculum	Master degree program, **mandatory**, 2nd semester.
Type of teaching, contact hours	Lectures, <60 students
Workload	1. Lectures: 3 x 50 = 150 minutes per week. 2. Exercises and Assignments: 3 x 60 = 180 minutes (3 hours) per week. 3. Private learning: 3 x 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 80% of the lectures to sit in the exams.
Mandatory prerequisites	-
Learning outcomes and their	Course Learning Outcome (CLO) after completing this module, ● College student be able to formulate and solve the problems of mathematics and its application with the approach of computational

corresponding PLOs	algorithms and implement it with Matlab and use the concept given to reveal the back and / or communicate ideas related to the field of mathematics either in writing or orally to the performance of individuals and in groups in teamwork. ● Students are able to explain the concept of the design and analysis of algorithms. ● Students are able to explain and implement the basic principles of computational matrix. ● Students are able to explain and implement some optimization algorithms.
Content	These courses provide the ability to formulate and solve the problems of mathematics and its applications to computational algorithms approach. In addition, students will be able to implement it with Matlab and use the concept given to reveal the back and / or communicate ideas related to the field of mathematics either in writing or orally with individual and group performance in teamwork. The topics covered include basic concepts of design and analysis of algorithms, the basic principles of matrix computation and optimization algorithms. The learning model is done through the tutorial and discussion in the classroom / lab. In addition to self-directed learning through tasks, learners are directed to cooperate in group work. Assessment of learning outcomes is done through an evaluation board, independent tasks, and the ability to write and present a given task.
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. Matrix Computation, 4th ed, Gene H. Golub and Charles F. Van Loan, The Johns Hopkins University Press, 2012 2. Introduction to Algorithms, 3rd Edition, Thomas H. Cormen, CE Leiserson, RL Rivest, MIT Press, 2009 Supporting: 1. Computer Algorithms: Introduction to Design and Analysis, 3rd Edition, Sara Baase and Allan Van Gelder, 2000