MODULE HANDBOOK
DATA ASSIMILATION

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

INSTITUT TEKNOLOGI SEPULUH NOPEMBER

MODULE HANDBOOK
DATA ASSIMILATION

Module name	**Data assimilation**	
Module level	Master	
Code	KM185373	
Course (if applicable)	Data assimilation	
Semester	Fall (Gasal)	
Person responsible for the module	Prof. Dr. Erna Apriliani, M.Si.	
Lecturer	Prof. Dr. Erna Apriliani, M.Si.	
Language	Bahasa Indonesia and English	
Relation to curriculum	Master degree program, **mandatory**, 3th 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 corresponding PLOs	Course Learning Outcome (CLO) after completing this module, CLO-1 Students are able to explain data assimilation methods and system models in which data assimilation methods can be used. CLO-2 Students are able to explain several estimation methods and the development of data assimilation methods CLO-3 Students can apply data assimilation to stochastic and deterministic dynamic models CLO-4 Students are able to explain and apply various developments in the Kalman filter algorithm in data assimilation.	PLO 2
Content	In this course, the students learn the definition of data assimilation, comparing between classical estimation and data assimilation, the application of data assimilation to estimate the stochastic dynamical system.	

Study and examination requirements and forms of examination	• Assignment 1 & 2 • Mid-term examination • Final examination
Media employed	LCD, whiteboard, websites (myITS Classroom), zoom.
Reading list	Main : 1. Lewis, J.M., Lakshmivarahan, Dhall, S.K., 2006, "*Dynamic Data Assimilation: A Least Squares Approach*", Cambride 2. Kalnay, 2003, "*Atmospheric Modeling, Data Assimilation And Predictability*", Cambridge Supporting :