MODULE HANDBOOK
DINAMICAL OPTIMIZATION

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

INSTITUT TEKNOLOGI SEPULUH NOPEMBER

MODULE HANDBOOK
DINAMICAL OPTIMIZATION

Module name	**Dinamical optimization**
Module level	Master
Code	KM185275
Course (if applicable)	Dinamical optimization
Semester	Spring (Genap)
Person responsible for the module	Subchan, S.Si, M.Sc., Ph.D.
Lecturer	Subchan, S.Si, M.Sc., Ph.D.
Language	Bahasa Indonesia and English
Relation to curriculum	Master degree program, 2nd 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	-
Learning outcomes and their corresponding ILOs	Course Learning Outcome (CLO) after completing this module, [C3] Students are able to analyze mathematical problems in one of the fields: analysis, algebra, modeling, system, optimization or computing sciences [C4] Students are able to work and research collaboratively on mathematical problems within either the area of pure mathematics or applied mathematics or computing sciences [C5] Students are able to communicate and present mathematical ideas with clarity and coherence, both written and verbally
Content	Discussion subjects include an assessment of dynamic optimization basics of calculus of variations, optimal control, modeling,

	application, simulation and computing. In the learning process in the classroom, students will learn to identify the real problems, modeling, and finish it. In addition to self-directed learning through tasks, learners are directed to cooperate in group work and write scientific papers in the form of paper.
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. Naidu, D.S, ”Optimal Control Systems’’, CRC Press, 2002. 2. Subchan, S and Zbikowski, R., “Computational Optimal Control: Tools and Practice”, Wiley, 2009. 3. Lewis, F. dan Syrmos Vassilis, “Optimal Control”, John Wiley & Sons, Singapore, 1995. 4. Suzanne Lenhart, John T. Workman, “Optimal Control Applied to Biological Models”, CRC Press, 2007. 5. Krasnov, M.L., Makarenko, G.I, dan Kiselev, A.I., Problems and Exercises in the Calculus of Variations , MIR Publisher Moskow, 1975. 6. Bryson and Yu-Chi Ho, Applied Optimal Control: Optimization, Estimation and Control, Taylor and Francis Group, 1975. Supporting : 1. Kamien, ML and Schwartz, N.L., “Dynamic Optimization”, North-Holland, Amsterdam, 1993. 2. Lewis F., “Optimal Estimation”, John Wiley & Sons, Singapore, 1986.