MODULE HANDBOOK
STOCHASTIC PROCESS

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

INSTITUT TEKNOLOGI SEPULUH NOPEMBER

MODULE HANDBOOK
STOCHASTIC PROCESS

Module name	**Stochastic Process**
Module level	Undergraduate
Code	KM184719
Course (if applicable)	Stochastic Process
Semester	Fall (Ganjil)
Person responsible for the module	Endah Rokhmati MP, S.Si, MT, Ph.D
Lecturer	Endah Rokhmati MP, S.Si, MT, Ph.D
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	Probability Theory Mathematical Statistics
Learning outcomes and their corresponding PLOs	Course Learning Outcome (CLO) after completing this module, CLO-1 Be able to understand the basics of stochastic processes and analyze a phenomenon through a mathematical frame of mind and then solve it optimally. CLO-2 Be able to perform simple identification of real problems, model them mathematically and solve them optimally. CLO-3 Be able to propose alternative solutions using a stochastic approach to simple problems individually or in groups.
Content	This course discusses the basics of stochastic processes, Simple random walks, Discrete Time Markov Chains (RMWD) and examples of RMWD models, State Classification, Transient Distribution, Limiting Behavior, First Passage Time, Occupancy Times, Continuous Time

	Markov Chains (RMWK), Homogeneous and Non-Homogeneous Poisson Processes, Birth Death Process, Queuing Model.
Study and examination requirements and forms of examination	• In-class exercises • Assignment 1, 2 • Mid-term examination • Final examination
Media employed	LCD, whiteboard, websites (myITS Classroom), zoom.
Reading lists	Main: 1. Kulkarni, V.G, "Modelling, Analysis, Design, and Control of Stochastic System", Springer Verlag, New York, 1999 2. V.G. Kulyarni, 1999. "Modeling, Analysis, Design, and Control of Stochastic System". Springer Verleg New York Supporting: 1. Allen Linda J.S, An Introduction to Stochastic Processes with Application to Biology, Pearson Education, 2003 2. Ross, S.M, Stochastic Processes, John Wiley and Sons, 1996