MODULE HANDBOOK
Measure Theory and Integration

BACHELOR DEGREE PROGRAM

DEPARTMENT OF MATHEMATICS

FACULTY OF SCIENCE AND DATA ANALYTICS

INSTITUT TEKNOLOGI SEPULUH NOPEMBER

MODULE HANDBOOK

Measure Theory and Integration

Module name	**Measure Theory and Integration**
Module level	Undergraduate
Code	KM184811
Course (if applicable)	**Measure Theory and Integration**
Semester	Spring (Genap)
Person responsible for the module	**Dra. Sunarsini, M.Si.**
Lecturer	**Dra. Sunarsini, M.Si.**
Language	Indonesia and English
Relation to curriculum	Undergraduate degree program, **elective**, 8th 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	Analysis I Analysis II
Learning outcomes and their corresponding PLOs	Course Learning Outcome (CLO) after completing this module, 1. Students able to explain concepts of algebraic sets and sigma algebra 2. Students able to explain Lebesgue measurable sets on R. 3. Students able to explain the definition of Lebesgue measurable functions 4. Students able to explain the definition of Lebesgue integral on R and its properties.
Content	Measure and Integral theory lecture materials include algebraic sets, sigma algebra, Lebesgue outer size, Lebesgue size, Lebesgue measurable function, almost everywhere concept and integral Lebesgue on R. In this course, students will learn to understand and explain the basic concepts of the subject matter. As an elective course, students are directed to find topics that are appropriate to

	the subject matter as an independent task. These results are then presented, to furthermore be used as a final student task. In this course, students will study the following subjects: algebraic sets and sigma algebra, measure and properties, the set function, the outer measure of Lebesgue, the Lebesgue measure, Lebesgue measurable function, the concept of Almost Everywhere, the stair function and simple functions, Lebesgue integral.
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. Jain, P.K., Gupta, V.P., "Lebesgue Measure and Integration", Wiley Eastern Ltd, 1986. 2. Sunarsini, Diktat Kuliah :"Teori Ukuran dan Integral", 2011 Supporting reference: 1. Royden, H.L., "Real Analysis", 4th ed., Mac Millan Pub. Comp, New York, 2010.