

Department of Mathematics
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Course	Course Name : Measure Theory and Integration
	Course Code : KM184811
	Credit : 2
	Semester : 8

Description of Course	
<p>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 \mathbb{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.</p>	
Learning Outcome	
PLO 1	[C2] Students are able to identify and explain foundations of mathematics that include pure, applied, and the basic of computing
PLO 2	[C3] Students are able to solve simple and practical problems by applying basic mathematical statements, methods and computations
PLO 3	[C4] Students are able to analyze simple and practical problems in at least one field of analysis, algebra, modeling, system optimizations and computing sciences
Course Learning Outcome	
<ol style="list-style-type: none"> 1. Students able to explain concepts of algebraic sets and sigma algebra 2. Students able to explain Lebesgue measurable sets on \mathbb{R}. 3. Students able to explain the definition of Lebesgue measurable functions 4. Students able to explain the definition of Lebesgue integral on \mathbb{R} and its properties. 	

Main Subject
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.
Prerequisites
Analysis I Analysis II
Reference
<ol style="list-style-type: none"> 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
<ol style="list-style-type: none"> 1. Royden, H.L., "Real Analysis", 4th ed., Mac Millan Pub. Comp, New York, 2010.