



Module Description/Course Syllabi

Study Programme: Bachelor of Mathematics
Faculty of Mathematics and Natural Sciences
Universitas Andalas

1. Course number and name

MAT62222 Introduction to Measure Theory and Lebesgue Integral

2. Credits and contact hours/Number of ECTS credits allocated

3 sks / 4,53 ECTS

3. Instructors and course coordinator

Dr. Shelvi Ekariani

4. Textbook, title, author, and year

D. L. Cohn. (2013). *Measure Theory*. 2nd edition. Springer, New York

5. Additional:

J. K. Hunter. (2011). *Measure Theory*. Lectures Note

6. Specific course information

A. Brief description of the content of the course (catalog description)

This course provides experience for students to know about sigma algebras, measures, outer measures, measurable spaces, measure spaces, measurable sets and functions, simple functions, Lebesgue integral, and L^p spaces.

B. Prerequisites or co-requisites

Real Analysis 1
<i>C. Indicate whether a required or elective course in the program</i>
Required
<i>D. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)</i>
First Cycle Bachelor
<i>E. Year of study when the course unit is delivered (if applicable)</i>
3Year
<i>F. Semester when the course unit is delivered</i>
Even Semester
<i>G. Mode of delivery (face-to-face, distance learning)</i>
Face to face

<i>7. Intended Learning Outcomes</i>
ILO-2: Possesses profound knowledge of the basic concept mathematics PI-1: An ability to explain the basic concept mathematics PI-2: An ability to give examples related to the basic concept mathematics PI-3: An ability to determine solution of the simple problems using the basic concept mathematics
ILO-3: An ability to identify, explain and generalize simple mathematical PI-1: An ability to identify simple mathematical problems PI-2: An ability to explain simple mathematical problems PI-3: An ability to generalize simple mathematical problems

ILO-4: An ability to use concept and fundamental technique of mathematics in solving simple mathematical problems PI-1: An ability to illustrate simple mathematical problems based on appropriate basic mathematical concepts and techniques PI-2: An ability to illustrate simple mathematical problems based on appropriate basic mathematical concepts and techniques PI-3: An ability to solve simple mathematical problems using the proper concept and mathematical fundamental techniques
ILO-5: An ability formally and correctly proves a simple mathematical statement using facts and methods that have been studied PI-1: An ability to identify the formal structures and analogy forms in mathematics PI-2: An ability to use fact and apply methods in proving simple mathematical statement PI-3: An ability to present simple mathematical statement proof rigorously (sequentially and conscientious) PI-4: An ability to conclude or interpret result of the proving simple mathematical statement
ILO-9: An ability to apply knowledge of mathematics in career and involve in lifelong learning PI-1: Able to carry out learning independently to deepen and expand the knowledge that has been obtained
8. Course Learning Outcomes
1. Ability to mastery the basic concepts of measure and Lebesgue integral, as well as their related properties. (ILO-2: PI-1, PI-2, PI-3)
2. Ability to apply the basic properties learned to solve problems related to the course material. (ILO-4: PI-1, PI-2, PI-3)
3. Ability to generalizing problems related to the subject matter of this course. (ILO-3: PI-1, PI-2, PI-3)
4. Ability to identifying the formal structure of statements related to the course material and their analogous forms. (ILO-5: PI-1-4)

5. Ability to mastery of fundamental techniques necessary for problem-solving within the scope of this course material. (ILO-4: PI-1, PI-2, PI-3)
6. Ability to independently solve problems related to the theory of measure and Lebesgue integral. (ILO-9: PI-1)
9. Brief list of topics to be covered
Sigma Algebra, Measurable Space, Measure, Measure Space, Outer Measure, Measurable Set, Measurable Function, Simple Function, Equivalence Relation, Lebesgue Integral, L^p Space.
10. Learning and teaching methods
Directed Learning, Teacher Center Learning
11. Language of instruction
Bahasa and English
12. Assessment methods and criteria
Summative Assessment: 1. Mid-term exam: 35% 2. Final exam: 35% 3. Quizzes: 10% 4. Homework: 20% Formative Assessment: