**Module name** | **Introduction to Theory of Measure and the Lebesgue Integral**
---|---
**Module level, if applicable** | Bachelor
**Code, if applicable** | MMM-3105
**Subtitle, if applicable** | -
**Courses, if applicable** | Introduction to Theory of Measure and the Lebesgue Integral
**Semester(s) in which the module is taught** | 6th (sixth)
**Person responsible for the module** | Chair of the Lab. of Analysis
**Lecturer** | Prof. Dr. Soeparna Darmawijaya
**Language** | Bahasa Indonesia
**Relation to curriculum** | Bachelor Degree, Elective Course, 6th semester

**Type of teaching, contact hours**
- Total workload is 136 hours per semester, which consists of 150 minutes lectures per week for 14 weeks, 180 minutes structured activities per week, 180 minutes individual study per week, in total is 16 weeks per semester, including mid exam and final exam.

**Workload**
- 150 minutes lectures, 180 minute structured activities.

**Credit points**
- 3

**Requirements according to the examination regulations**
- Students have taken Introduction to Theory of Measure and the Lebesgue Integral course (MMM-3105) and have participated in the final examination of the course.

**Recommended prerequisites**
- Introduction to Analysis I and sequence of functions.

**Module objectives/intended learning outcomes**
- After completing this course the students have ability to:
  - CO 1. analyze the measurability of a set and a function.
  - CO 2. analyze the Lebesgue integrability of a function on \([a, b]\).
  - CO 3. prove and develop some properties of Lebesgue integrable functions.

**Content**
- Measure: length of an interval and outer measure of a set.
- Measurable space: definition of measurable space, properties of measurable space, and measure (Lebesgue).
- Measurable function: definition of measurable function, some properties of measurable functions, operations of measurable functions, characteristic function, and simple function.
- The Lebesgue Integral: definition of the Lebesgue integral on \([a, b]\), relation between the Riemann integral and the Lebesgue integral on \([a, b]\), some properties of the Lebesgue integral on \([a, b]\).

**Study and examination requirements and forms of examination**

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<tr>
<th>No</th>
<th>Assessment methods (components, activities)</th>
<th>Weight (percentage)</th>
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<tbody>
<tr>
<td>1</td>
<td>Final Examination</td>
<td>35% – 45%</td>
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<td>2</td>
<td>Mid-Term Examination</td>
<td>30% – 35%</td>
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<td>3</td>
<td>Class Activities: Quiz, Homework, etc.</td>
<td>25% – 30%</td>
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The initial cut-off points for grades A, B, C, and D should not be less than 80%, 70%, 50%, and 40%, respectively.

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<tr>
<th>Media employed</th>
<th>Board, LCD Projector, Laptop/Computer</th>
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**PLO and CO Mapping**

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