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Master in Mathematics

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MODULE HANDBOOK

Module Name	*Analysis II*
Module level, if applicable	*Master Program*
Code, if applicable	*MMM 5102*
Subtitle, if applicable	
Courses, if applicable	*Analysis II*
Semester(s) in which the module is taught	*2nd semester*
Person responsible for the module	*Chair of Analysis Research Group*
Lecturer(s)	*Dewi Kartika Sari, M. Sc., Ph.D and Prof. Dr. Supama*
Language	*Bahasa Indonesia*
Relation to curriculum	*Master Degree, compulsory for analysis track, 2nd semester*
Teaching methods	*Lectures, classroom discussion, and flipped classroom*
Workload (incl. contact hours, self-study hours)	*3 hours lectures, 3 hours structured activities, 3 hours individual study, 16 weeks per semester (including mid-term and final examinations), 144 hours per semester.*
Credit points	*3*
Required and recommended prerequisites for joining the module	*Students have taken the course of Analysis I and have participated in the final exam of the course.*
Module objectives/intended learning outcomes	*After completing this course the students have ability to :* *CO1. Analyze the measurability of a set and a function.* *CO2. Analyze the Lebesgue integrability of a function on a measurable set and prove some properties of Lebesgue integrable functions.* *CO3. Evaluate the general measurable sets and function and prove some properties of general integrable function*

Content	• *Measure: length of an interval and outer measure of a set.* • *Measurable set: definition of measurable sets, properties of measurable sets, and Lebesgue measure.* • *Non-measurable set.* • *Measurable function: definition of measurable functions, some properties of measurable functions, operations of measurable functions, step functions, and simple functions.* • *The Lebesgue Integral: definition of the Lebesgue integral on a measurable set, relation between the Riemann integral and the Lebesgue integral on [a, b], some properties of the Lebesgue integral.* • *General measure and general integration: definition and properties of general measure and general measurable function, general integration over a general measurable set, and Radon Nikodym theorem.*
Examination forms	*Essay and oral presentation*
Study and examination requirements	*The final mark will be weighted as follows:* *No Assessment methods (components, activities) Weight (percentage)* *1 Final Examination 45%* *2 Mid-Term Examination 30%* *3 Class Activities: Quiz, Homework, etc 25%*
Media employed	*Board, LCD Projector, Laptop/Computer*
Reading list	1. Halsey L. Royden, and Patrick M. Fitzpatrick, 2010, Real Analysis, 4th Edition, Prentice Hall. 2. Richard L. Wheeden, and Antoni Zygmund, 1977, Measure and Integration, CRC Press. 3. Jain, P.K., Jain, P.K. and Gupta, V.P., 1986. Lebesgue measure and integration. John Wiley & Sons.

CO-PLO Mapping

	LO1	**LO 2**	**LO 3**	**LO 4**	**LO 5**	**LO 6**
CO 1	V	V	V			V
CO 2	V	V	V			V
CO 3	V	V	V			V

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