



UNIVERSITAS NEGERI YOGYAKARTA

FACULTY OF MATHEMATICS AND NATURAL SCIENCES

DEPARTMENT OF MATHEMATICS EDUCATION

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Bachelor of Science in Mathematics

MODULE HANDBOOK

Module name:	Introduction to Functional Analysis
Module level,if applicable:	Undergraduate
Code:	MAT6347
Sub-heading,if applicable:	-
Classes,if applicable:	-
Semester:	6 th
Module coordinator:	Kus Prihantoso Krisnawan, M.Si.
Lecturer(s):	Kus Prihantoso Krisnawan, M.Si.
Language:	Bahasa Indonesia
Classification within the curriculum:	Objective course
Teaching format / class hours perweek during the semester:	150 minutes lectures and 180 minutes structured activities per week.
Workload:	Total workload is 136 hours per semester which consists of 150 minutes lectures, 180 minutes structured activities, and 180 minutes self-study per week for 16 weeks.
Creditpoints:	3
Prerequisites course(s):	Real Analysis (MAT6325)
Courseoutcomes:	After taking this course the students have ability to: CO 1. Respecting other people's views, opinions,and original ideas CO 2. Understanding definitions, theorems, and some characteristics in mathematics using critical and systematic thinking in a manner individually or groups CO 3. Communicating, in writing or verbally,ideas to

	<p>understand or solve mathematical problems.</p> <p>CO 4. Explaining the meaning or definition of terms and the intent of the theorems or properties in mathematics</p> <p>CO 5. Using related definitions and theorems to prove other properties or theorems.</p>																														
Content:	<p>This course discusses metric spaces, Norm (Banach) spaces, operator, and Inner Product (Hilbert) spaces. Firstly, we will talk about metric spaces, open sets and close sets, neighborhood, convergent, and Cauchy sequences. Secondly, the subject of norm spaces includes: vector spaces, norm (Banach) spaces, linear operator, linear functional, and Hahn-Banach theorem. Finally, the subject of Inner Product (Hilbert) spaces includes: Inner Product (Hilbert) spaces, orthogonality and orthonormality, and functional representation on Hilbert spaces.</p>																														
Study/exam achievements:	<p>CO1: Attitude assessment is carried out at each meeting using observation and / or self-assessment techniques by the assumption that every student is good. The student will be given a value as very good or not good if he/she shows, significantly, excellent or poor attitude. The results of attitude assessment used as one of the graduation requirements.</p> <p>The final grades will be weight as follow:</p> <table border="1"> <thead> <tr> <th>No</th> <th>CO</th> <th>Assessment Object</th> <th>Assessment Technique</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td rowspan="3">1</td> <td rowspan="3">CO 2 and 4</td> <td>a. Presentation</td> <td>Observation</td> <td>10%</td> </tr> <tr> <td>b. Individual Assignment</td> <td>Written</td> <td>10%</td> </tr> <tr> <td>c. Quiz</td> <td>Written</td> <td>20%</td> </tr> <tr> <td rowspan="3">2</td> <td rowspan="3">CO 3 and 5</td> <td>a. Group Assignment</td> <td rowspan="3">Written</td> <td>10%</td> </tr> <tr> <td>b. Mid test</td> <td>20%</td> </tr> <tr> <td>c. Final test</td> <td>30%</td> </tr> <tr> <td colspan="4">Total</td> <td>100%</td> </tr> </tbody> </table>	No	CO	Assessment Object	Assessment Technique	Weight	1	CO 2 and 4	a. Presentation	Observation	10%	b. Individual Assignment	Written	10%	c. Quiz	Written	20%	2	CO 3 and 5	a. Group Assignment	Written	10%	b. Mid test	20%	c. Final test	30%	Total				100%
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1	CO 2 and 4	a. Presentation	Observation	10%																											
		b. Individual Assignment	Written	10%																											
		c. Quiz	Written	20%																											
2	CO 3 and 5	a. Group Assignment	Written	10%																											
		b. Mid test		20%																											
		c. Final test		30%																											
Total				100%																											
Forms of media:	Board, LCD Projector, Laptop/Computer																														
Literature:	<p>1. Kreyszig, E. 1978. <i>Introductory Functional Analysis with Applications</i>. John Wiley & Sons, Inc.</p> <p>2. Schecchter, M. 2002. <i>Principle of Functional Analysis</i>.</p>																														

	Second Edition. American Mathematics Society. 3. Conway, J.B. 1990. <i>A Course in Functional Analysis</i> . Second Edition. Springer-Verlag.
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PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
CO1		✓								
CO2			✓							
CO3				✓						
CO4					✓					
CO5						✓				