



# UNIVERSITAS GADJAH MADA

Faculty of Mathematics and Natural Sciences

Mathematics Department

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## Doctor in Mathematics

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## MODULE HANDBOOK

Module name	Topics in Function and Sequence Spaces
Module level, if applicable	Doctor
Code, if applicable	MMM 7109
Subtitle, if applicable	
Courses, if applicable	Topics in Function and Sequence Spaces
Semester(s) in which the module is taught	1 <sup>st</sup> (first)
Person responsible for the module	Chair of Analysis Research Group
Lecture(s)	Prof. Dr. Supama, M.Si Dewi Kartikasari, MSc, PhD.
Language	Bahasa Indonesia
Relation to curriculum	Doctor Degree, Elective course, 1 <sup>st</sup> (first) semester
Type of teaching, contact hours	3 hours lectures, 3 hours structured activities.
Workload	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
Requirements according to the examination regulations	--
Recommended prerequisites	--.
Module objectives/intended learning outcomes	After completing this course the students have ability to: CO 1. justify and prove some concepts related to function spaces and sequence spaces. CO 2. combine some properties in function spaces or sequence spaces to solve some problems related to function spaces and sequence spaces.
Content	Sequence Spaces: <ul style="list-style-type: none"> <li>• The spaces <math>c_0, c, bv, \ell_p</math> (<math>1 \leq p &lt; \infty</math>), and, <math>\ell_\infty</math>.</li> <li>• An Orlicz function and its properties.</li> <li>• Orlicz spaces and modular spaces.</li> <li>• Normed spaces and <math>F</math>-normed spaces.</li> <li>• Sequence spaces defined by an Orlicz function.</li> </ul> Function spaces: <ul style="list-style-type: none"> <li>• Spaces of bounded variation and absolutely continuous functions.</li> <li>• the Lebesgue spaces.</li> <li>• An Orlicz function and its properties.</li> </ul>

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Study and examination requirements and forms of examination	<p>The final mark will be weighted as follows:</p> <table border="1"> <thead> <tr> <th>No</th> <th>Assessment methods (components, activities)</th> <th>Weight (percentage)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Final Examination</td> <td>45%</td> </tr> <tr> <td>2</td> <td>Mid-Term Examination</td> <td>30%</td> </tr> <tr> <td>3</td> <td>Class Activities: Quiz, Homework, etc</td> <td>25%</td> </tr> </tbody> </table> <p>Final grade will be determined as follows: Grade Criteria</p> <table border="1"> <tbody> <tr> <td>A</td> <td><math>95 \leq \text{final mark} \leq 100</math></td> </tr> <tr> <td>A-</td> <td><math>90 \leq \text{final mark} &lt; 95</math></td> </tr> <tr> <td>A/B</td> <td><math>85 \leq \text{final mark} &lt; 90</math></td> </tr> <tr> <td>B+</td> <td><math>80 \leq \text{final mark} &lt; 85</math></td> </tr> <tr> <td>B</td> <td><math>75 \leq \text{final mark} &lt; 80</math></td> </tr> <tr> <td>B-</td> <td><math>70 \leq \text{final mark} &lt; 75</math></td> </tr> <tr> <td>B/C</td> <td><math>65 \leq \text{final mark} &lt; 70</math></td> </tr> <tr> <td>C+</td> <td><math>60 \leq \text{final mark} &lt; 65</math></td> </tr> <tr> <td>C</td> <td><math>55 \leq \text{final mark} &lt; 60</math></td> </tr> <tr> <td>D</td> <td><math>40 \leq \text{final mark} &lt; 55</math></td> </tr> <tr> <td>E</td> <td><math>0 \leq \text{final mark} &lt; 40</math></td> </tr> </tbody> </table>	No	Assessment methods (components, activities)	Weight (percentage)	1	Final Examination	45%	2	Mid-Term Examination	30%	3	Class Activities: Quiz, Homework, etc	25%	A	$95 \leq \text{final mark} \leq 100$	A-	$90 \leq \text{final mark} < 95$	A/B	$85 \leq \text{final mark} < 90$	B+	$80 \leq \text{final mark} < 85$	B	$75 \leq \text{final mark} < 80$	B-	$70 \leq \text{final mark} < 75$	B/C	$65 \leq \text{final mark} < 70$	C+	$60 \leq \text{final mark} < 65$	C	$55 \leq \text{final mark} < 60$	D	$40 \leq \text{final mark} < 55$	E	$0 \leq \text{final mark} < 40$
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Media employed	Board, LCD Projector, Laptop/Computer																																		
Reading List	<ol style="list-style-type: none"> <li>1. Lindenstrauss, J. and Tzafriri, L., 1996, <i>Classical Banach Spaces I and II</i>, Springer.</li> <li>2. Musielak, J., 1983, <i>Orlicz Spaces and Modular Space</i>, Springer Verlag,</li> <li>3. Halsey L. Royden, and Patrick M. Fitzpatrick, 2010, <i>Real Analysis</i>, 4th Edition, Prentice Hall.</li> </ol>																																		

### PI and CO Mapping

	PI 1 Mathematical Concept	PI 2 Mathematical Procedures	PI 3 Mathematical Connection	PI 4 Mathematical Reasoning	PI 5 Mathematical Representation	PI 6 Mathematical Communication	PI 7 Use of Technology	PI 8 Personal and Social Competences
CO 1	v	v	v	v		v		
CO 2	v	v	v	v		v		