UNIVERSITAS GADJAH MADA
Faculty of Mathematics and Natural Sciences
Department of Mathematics
Sekip Utara Bulaksumur Yogyakarta 55281 Telp: +62 274 552243 Fax: +62 274 555131 Email: math@ugm.ac.id Website: http://math.fmipa.ugm.ac.id

Master Program in Mathematics

Telp : +62 274 552243
Email : maths1@ugm.ac.id; kaprodi-s1-matematika.mipa@ugm.ac.id
sekprodi-s1-matematika.mipa@ugm.ac.id
Website : http://s1math.fmipa.ugm.ac.id/

MODULE HANDBOOK

Module Name	Fixed point theory
Module level, if applicable	Master
Code, if applicable	MMM-5108
Subtitle, if applicable	
Courses, if applicable	Fixed point theory
Semester(s) in which the module is taught	3rd (third)
Person responsible for the module	Chair of Analysis Research Group
Lecturer(s)	Drs. Yusuf, MA.
Language	Bahasa Indonesia
Relation to curriculum	Elective course in the second year (3rd semester) master's degree
Teaching methods	Lecture, group discussion, classroom discussion, and presentation.
Workload (incl. contact hours, self-study hours)	The total workload is 136 hours per semester, which consists of 150 minutes of lectures per week for 14 weeks, 180 minutes of structured activities per week, and 180 minutes of individual study per week, in total is 16 weeks per semester, including mid-exam and final exam.
Credit points	3
Required and recommended prerequisites for joining the module	Before taking this course, students must have a good understanding about metric spaces, Banach spaces, and Hilbert spaces.

<table>
<tr><td>Module objectives/intended learning outcomes</td><td>After completing this course, the students should have:

CO 1. ability to prove properties related to contraction mappings;
CO 2. ability to prove fixed point theorems related to non-expansive mappings;
CO 3. ability to use continuation methods to prove fixed point theorems for contractive and non-expansive mappings;
CO 4. ability to prove properties related to the theorems of Brouwer, Schauder, and Mönch.</td></tr>
<tr><td>Content</td><td>Contraction mappings on metric spaces; Banach's contraction principle; theorems related to contraction mappings on metric spaces.

Non-expansive mappings; fixed point theorems related to non-expansive mappings.

Continuation methods for contractive and non-expansive mappings.

The theorems of Brouwer, Schauder, and Mönch.</td></tr>
<tr><td>Examination forms</td><td>Essay</td></tr>
<tr><td>Study and examination requirements</td><td>The final mark will be weighted as follows:
<table><tr><th>No</th><th>Assessment methods (components, activities)</th><th>Weight (percentage)</th></tr><tr><td>1</td><td>Final Examination</td><td>35 - 45%</td></tr><tr><td>2</td><td>Mid-Term Examination</td><td>30 - 40%</td></tr><tr><td>3</td><td>Class Activities: Quiz, Homework, Presentation, etc.</td><td>25 - 30%</td></tr></table>To pass the course, the minimum grade is C</td></tr>
<tr><td>Media employed</td><td>Board, LCD Projector, Laptop/Computer</td></tr>
<tr><td>Reading list</td><td>Agarwal, Ravi P. Meehan, Maria. and O'Regan, Donal. 2001, Fixed Point Theory and Applications, Cambridge University Press, United Kingdom.
Dugundji, James. and Granas, Andrzej. 1982, Fixed Point Theory, Monografie Matematyczne,Vol 16, Polish Scientific Publishers.
Khamsi M.A., and Kirk, W., 2001, An Introduction to Metric Spaces and Fixed Point Theory, John Wiley & Sons. Inc, New York.</td></tr>
</table>

CO-PLO Mapping

	PLO – 1 S2 Mat	PLO – 2 S2 Mat	PLO – 3 S2 Mat	PLO – 4 S2 Mat	PLO – 5 S2 Mat	PLO –6 S2 Mat
CO 1	V		V			
CO 2	V		V	V		
CO 3	V		V	V	V	
CO 4	V		V		V	

Compilation Date :

Modified Date : August 7th, 2022