



# UNIVERSITAS GADJAH MADA

Faculty of Mathematics and Natural Sciences

Department of Mathematics

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## Doctor in Mathematics

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## MODULE HANDBOOK

Module Name	<i>Topics in Topology</i>
Module level, if applicable	<i>Doctor</i>
Code, if applicable	<i>MMM-7108</i>
Subtitle, if applicable	-
Courses, if applicable	<i>Topics in Topology</i>
Semester(s) in which the module is taught	<i>1<sup>st</sup> or 2<sup>nd</sup> semester</i>
Person responsible for the module	<i>Chair of the Lab. Of Analysis</i>
Lecturer(s)	<i>Atok Zulijanto, M.Sc., Ph.D.; Hadrian Andradi, M.Sc., Ph.D.; Dewi Kartika Sari, M.Sc., Ph.D.</i>
Language	<i>Bahasa Indonesia</i>
Relation to curriculum	<i>Elective course in the 1<sup>st</sup> or 2<sup>nd</sup> semester of doctor's degree</i>
Teaching methods	<i>Lecture, classroom discussion, flipped classroom.</i>
Workload (incl. contact hours, self-study hours)	<i>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.</i>
Credit points	3
Required and recommended prerequisites for joining the module	<i>Students have strong knowledge on the set theory</i>

Module objectives/intended learning outcomes	<p>After completing this course, the students should have the ability to:</p> <p>CO 1. Prove some properties in topology topics</p> <p>CO 2. Combine some properties in topology to solve some problems in areas related to topology.</p> <p>CO 3. Use or combine the concepts in topology to solve problems related to the students' research topic</p>												
Content	<ol style="list-style-type: none"> <li>1. General topology (definition of topological space, bases, sub-bases, subspace, sums, cartesian products, quotient spaces, continuous functions, open functions and closed functions, homeomorphism, , axioms of separation, convergence in topological spaces, covering axioms, compactness and connectedness.)</li> <li>2. Topology related to posets/ the domain theory</li> <li>3. Algebraic topology (topology related to algebra structure: homotopy, homology, cohomology)</li> <li>4. Topological method in analysis (topology used to solve problems in real analysis such as the Polish space, Baire one functions defined on topological spaces)</li> </ol>												
Examination forms	Oral presentation, essay.												
Study and examination requirements	<p>The final mark will be weighted as follows:</p> <table> <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: final project/presentation/oral exam/essay</td> <td>30-40%</td> </tr> <tr> <td>2</td> <td>Mid-Term Examination: presentation/oral exam/essay</td> <td>30-40%</td> </tr> <tr> <td>3</td> <td>presentation</td> <td>20-30%</td> </tr> </tbody> </table> <p>To pass the course, the minimum grade is B.</p>	No	Assessment methods (components, activities)	Weight (percentage)	1	Final Examination: final project/presentation/oral exam/essay	30-40%	2	Mid-Term Examination: presentation/oral exam/essay	30-40%	3	presentation	20-30%
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1	Final Examination: final project/presentation/oral exam/essay	30-40%											
2	Mid-Term Examination: presentation/oral exam/essay	30-40%											
3	presentation	20-30%											
Media employed	Board, LCD Projector, Laptop/Computer												
Reading list	<ol style="list-style-type: none"> <li>1. Dugundji J., 1996, <i>Topology</i>, Allyn and Bacon Inc. Boston.</li> <li>2. Engelking R., 1989, <i>General Topology</i>, Heldermann Verlag, Berlin.</li> <li>3. Bourbaki, N., 2013. <i>General Topology: Chapters 1–4</i> (Vol. 18). Springer Science &amp; Business Media.</li> <li>4. Gierz, G., Hofmann, K.H., Keimel, K., Lawson, J.D., Mislove, M. and Scott, D.S., 2003. <i>Continuous lattices and domains</i> (Vol. 93). Cambridge university press.</li> <li>5. Goubault-Larrecq, J., 2013. <i>Non-Hausdorff topology and domain theory: Selected topics in point-set topology</i> (Vol. 22). Cambridge University Press.</li> <li>6. Hatcher, A., 2005. <i>Algebraic topology</i>. Cambridge University Press.</li> </ol>												

### CO-PLO Mapping

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6
CO 1	v	v				v
CO 2	v	v			v	v
CO 3	v	v	v		v	v

Last Modified Date : 12 August 2022