



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	Fundamental Algebra
Module level, if applicable	Doctoral
Code, if applicable	MMM 7211
Subtitle, if applicable	
Courses, if applicable	Aljabar Fundamental
Semester(s) in which the module is taught	1 st or 2 nd semester
Person responsible for the module	Head of Algebra Laboratory
Lecturer(s)	Budi Surodjo, Indah Emilia Wijayanti
Language	Bahasa Indonesia
Relation to curriculum	Elective course
Teaching methods	Lecture, presentation, project
Workload (incl. contact hours, self-study hours)	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.
Credit points	3
Required and recommended prerequisites for joining the module	Students master the concepts of logic and sets, algebraic structure theory and linear algebraic theory

Module objectives/intended learning outcomes	<p>After taking this course, students will be able to:</p> <p>CO 1. clarify the concept, definitions of the topics in the lecture</p> <p>CO 2. prove properties related to the topic in the discussion.</p> <p>CO 3. formulate conjectures related to the material discussed.</p> <p>CO 4. generalize the concepts in the discussion into his research topics and validates them</p>												
Content	Materials from various algebraic topics include algebraic concepts that have not been covered in other courses, such as categorical and function theory, lattice theory, logic theory, number theory, etc.												
Examination forms	Oral presentation, essay, paper												
Study and examination requirements	<p>The final mark will be computed from a proportional weight of assignments, mid examination and final examination. The final mark will be weighted as follows:</p> <table border="0"> <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>20 - 30%</td> </tr> <tr> <td>2</td> <td>Mid-Term Examination</td> <td>20 - 30%</td> </tr> <tr> <td>3</td> <td>Class Activities: Quiz, Project, etc.</td> <td>50 - 60%</td> </tr> </tbody> </table> <p>Minimum final mark to pass : B</p>	No	Assessment methods (components, activities)	Weight (percentage)	1	Final Examination	20 - 30%	2	Mid-Term Examination	20 - 30%	3	Class Activities: Quiz, Project, etc.	50 - 60%
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1	Final Examination	20 - 30%											
2	Mid-Term Examination	20 - 30%											
3	Class Activities: Quiz, Project, etc.	50 - 60%											
Media employed	Whiteboard, LCD screen, laptop												

<p>Reading list</p>	<ol style="list-style-type: none"> 1. Chen, G. and Tat Pham, T. , 2001, Introduction to Fuzzy Sets, Fuzzy Logic, and Fuzzy Control Systems, CRC Press LLC, http://sc.uaemex.mx/xose/html/clases/logica/articles/libro_fuzzy_logic.pdf 2. James J. Buckley, J.J. and Eslami, E., 2002, An Introduction to Fuzzy Logic and Fuzzy Sets, Springer https://link.springer.com/book/10.1007%2F978-3-7908-1799-7 3. Krasimir T. Atanassov, 2013, Intuitionistic Fuzzy Sets, Theory and Applications, Springer-Verlag Berlin Heilderberg GmbH 4. Krasimir T. Atanassov, 2016, Intuitionistic Fuzzy Logics, Springer 5. Klir, G.J., and Bo Yuan, 1995, Fuzzy Sets, Fuzzy Logic, and Fuzzy Systems, Selected paper by Lotfi A. Zadeh, World Scientific 6. W.B. Vasantha Kandasamy, 2003, Smarandache Fuzzy Algebra, American Research Press 7. Setiadji, 2009, Himpunan dan Logika Samar dan Aplikasinya, Graha Ilmu 8. Barnabas Bede, 2012, Mathematics of Fuzzy set and Fuzzy Logic, Springer 9. Garret Birkhof, 1967, Lattice Theory, American Mathematical Society 10. George Gratzer, 2009, Lattice Theory, First Concepts and Distributive Lattices, Dover Publications, Inc, New York 11. George Gratzer and Freiderich Wehrung, 2016, Lattice Theory, Special Topics and Applications, Vol. 2, Birkhauser 12. Stanley Burris and H.P. Shakappnavar, 2012, A course in Universal Algebra https://www.math.uwaterloo.ca/~snburris/htdocs/UALG/univ-algebra2012.pdf 13. Viijay K. Garg, 2016, Introduction to Lattice Theory with Computer Science Applications, John Wiley & Son Inc, New Jersey 14. Anderson, F.W., Fuller, K.R., 1992, Rings and Categories of Modules, Springer Verlag, New York. 15. Awodey, S., 2006, Category Theory, Clarendon Press, Oxford. 16. Schubert, H., 1972, Categories, Springer Verlag, Berlin. 17. Wisbauer, R., 1991, Foundation of Module and Ring Theory, Gordon and Breach, Philadelphia.
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CO-PLO Mapping

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

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