



# UNIVERSITAS GADJAH MADA

Faculty of Mathematics and Natural Sciences

Mathematics Department

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## Undergraduate Programme in Mathematics

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## MODULE HANDBOOK

Module name	Discrete Mathematics I												
Module level, if applicable	Bachelor												
Code, if applicable	MMM-1206												
Subtitle, if applicable	-												
Courses, if applicable	Discrete Mathematics I												
Semester(s) in which the module is taught	2 <sup>nd</sup> (second)												
Person responsible for the module	Chair of the Lab. of Algebra												
Lecturer(s)	Dr. Al. Sutjijana, M.Sc. Dr. rer. nat. Yeni Susanti, M.Si.												
Language	Bahasa Indonesia												
Relation to curriculum	Compulsory course in the first year (2 <sup>nd</sup> semester) Bachelor Degree												
Type of teaching, contact hours	100 minutes lectures and 120 minutes structured activities per week.												
Workload	Total workload is 90.67 hours per semester, which consists of 100 minutes lectures per week for 14 weeks, 120 minutes structured activities per week, 120 minutes individual study per week, in total is 16 weeks per semester, including mid exam and final exam.												
Credit points	2												
Requirements according to the examination regulations	Students have taken Discrete Mathematics I course (MMM-1206) and have an examination card where the course is stated on.												
Recommended prerequisites	Students have taken Introduction to Mathematical Logic course (MMM-1208) and have participated in the final examination of the course.												
Module objectives/intended learning outcomes	After completing this course the students should have : CO 1. ability to identify combinatorial problems and ability to solve using appropriate principles of combinatorics CO 2. ability to use and prove some binomial identities CO 3. ability to solve discrete problems using pigeonhole principle.												
Content	Mathematical induction, permutation and combination, Binomial Theorem, inclusion and exclusion principle, pigeonhole principle.												
Study and examination requirements and forms of examination	The final mark will be weighted as follows: <table border="1" style="width: 100%; border-collapse: collapse;"> <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>40%</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>30%</td> </tr> </tbody> </table> <p>The initial cut-off points for grades A, B, C, and D should not be less than 80%, 70%, 50%, and 40%, respectively.</p>	No	Assessment methods (components, activities)	Weight (percentage)	1	Final Examination	40%	2	Mid-Term Examination	30%	3	Class Activities: Quiz, Homework, etc.	30%
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1	Final Examination	40%											
2	Mid-Term Examination	30%											
3	Class Activities: Quiz, Homework, etc.	30%											
Media employed	Board, LCD Projector, Laptop/Computer												
Reading List	<ol style="list-style-type: none"> <li>Kenneth H. Rosen, <i>Discrete Mathematics and Its Applications</i>, Seventh Edition, 2011, Mc-Graw Hill Education</li> <li>Richard A. Brualdi, R., 2009, <i>Introduction to Combinatoric</i>, 5<sup>th</sup> edition, Pearson</li> <li>John M. Harris, Jeffrey L. Hirst, Michael J. Mossinghof, 2008, <i>Combinatorics and Graph Theory</i>, Springer</li> <li>L. Lovasz, J. Pelikan, K. Vesztergombi, 2003, <i>Discrete Mathematics Elementary and Beyond</i>, Springer-Verlag, New York.</li> </ol>												

	5. Chen Chuan Chong, Koh Khee Meng, 1992, <i>Principles and Techniques in Combinatorics</i> , World Scientific Publishing Co Pte Ltd. 6. R.C. Bose, B. Manvel, 1984, <i>Introduction to Combinatorial Theory</i> , John Wiley and Sons. 7. C. L. Liu, 1977, <i>Elements of Discrete Mathematics</i> , McGraw-Hill Book Company.
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### PLO and CO Mapping

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9
CO 1		v			v				
CO 2		v	v						
CO 3		v			v				