



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 nd (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 nd 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% |
| No | Assessment methods (components, activities) | Weight (percentage) | | | | | | | | | | | |
| 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"> 1. C. L. Liu, 1977, <i>Elements of Discrete Mathematics</i>, McGraw-Hill Book Company. 2. Richard A. Brualdi, R., 2009, <i>Introduction to Combinatoric</i>, 5th edition, Pearson 3. L. Lovasz, J. Pelikan, K. Vesztergombi, 2003, <i>Discrete Mathematics Elementary and Beyond</i>, Springer-Verlag, New York. 4. R.C. Bose, B. Manvel, 1984, <i>Introduction to Combinatorial Theory</i>, John Wiley and Sons. | | | | | | | | | | | | |

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 | | | | |