



# 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	Introduction to Number Theory															
Module level, if applicable	Bachelor															
Code, if applicable	MMM-1105															
Subtitle, if applicable	-															
Courses, if applicable	Introduction to Number Theory															
Semester(s) in which the module is taught	First year (even semester)															
Person responsible for the module	Chair of the Lab. of Analysis															
Lecturer(s)	Dr. Budi Surodjo, M.Si.															
Language	Bahasa Indonesia															
Relation to curriculum	Elective course in the first year (even semester)															
Type of teaching, contact hours	150 minutes lectures per week, 180 minutes structured activities per week															
Workload	Total workload is 136 hours per semester, which consist of 150 minutes lectures per week for 14 weeks, 180 minutes structured activities per week (2 individual and 1 teamwork), and 180 minutes individual study per week, in total 16 weeks per semester, including preparation for mid exam and final exam.															
Credit points	3															
Requirements according to the examination regulations	Students have taken Introduction to Number Theory course (MMM-1105) 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 be able: CO 1. to explain the constructions of all number systems CO 2. to prove the elementary properties of number systems. CO 3. to prove any advance properties of number theory using the elementary properties. CO 4. to solve the mathematical problems using number theory.															
Content	Natural numbers, system of integers, divisor, prime numbers, prime factorisation prima, order, division algorithm, numerical systems, congruence, step function, system of rational numbers, system of real numbers.															
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>35</td> </tr> <tr> <td>2.</td> <td>Mid-Term Examination</td> <td>30</td> </tr> <tr> <td>3.</td> <td>Quiz/Presentation</td> <td>20</td> </tr> <tr> <td>4.</td> <td>Homework (Project)</td> <td>15</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	35	2.	Mid-Term Examination	30	3.	Quiz/Presentation	20	4.	Homework (Project)	15
No	Assessment methods (components, activities)	Weight (percentage)														
1.	Final Examination	35														
2.	Mid-Term Examination	30														
3.	Quiz/Presentation	20														
4.	Homework (Project)	15														
Media employed	Projector, board, laptop, e-learning via <a href="http://elisa.ugm.ac.id">http://elisa.ugm.ac.id</a>															

Reading List	<ol style="list-style-type: none"> <li>1. Webber, G.C., 1966, <i>Number System of Analysis</i>, Addison-Wesley Pub.Company, Massachusetts.</li> <li>2. Soehakso, RMJT, 1990, <i>Pengantar Matematika Modern</i>, FMIPA UGM</li> <li>3. Surodjo, B, 2014, <i>Diklat Teori Bilangan</i>, BOPTN, UGM</li> <li>4. Titu, A., Andrica, D., dan Feng Z, 2006, <i>104 Number Theory, Problems</i>, Berlin</li> </ol>
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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
CO 2			v						
CO 3			v						v
CO 4			v						v