



**UNIVERSITAS NEGERI PADANG**  
 FACULTY OF MATHEMATICS AND NATURAL SCIENCES  
 MATHEMATICS DEPARTMENT, MATHEMATICS EDUCATION STUDY PROGRAM  
 Main Campus Universitas Negeri Padang.  
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**Bachelor of Mathematics Education**

**MODULE HANDBOOK**

Module name:	Number Theory
Module level, if applicable:	Bachelor
Code:	MAT1.61.3305
Sub-heading, if applicable:	-
Classes, if applicable:	Number Theory
Semester:	3 <sup>rd</sup> (third)
Module coordinator:	Dr. Arnellis, M.Si.
Lecturer(s):	Dr. Arnellis, M.Si., and Team
Language:	Bahasa Indonesia and English
Classification within the curriculum:	Study Program Compulsory Courses
Teaching format / class hours per week during the semester:	<p>Teaching format:</p> <ul style="list-style-type: none"> <li>• Lectures (face to face activities): Problem Based Learning with method such as Explanation, Expository, and Class Discussion.</li> <li>• Structured Assignment,</li> <li>• Independent Activities.</li> <li>• Practice</li> </ul> <p>3 x 170 minutes = 510 minutes = 8.50 hours</p>
Workload:	<p>16 weeks per semester include Midterm Exam and Final Exam which consist of:</p> <ul style="list-style-type: none"> <li>• 1.67 hours lectures (2 x 50 minutes) per week,</li> <li>• 2 hours structured assignments (2 x 60 minutes) per week,</li> <li>• 2 hours independent activities (2 x 60 minutes) per week</li> <li>• 2.83 hours practice (1 x 170) per week</li> </ul> <p>16 x 170 x 3 = 8160 Minutes =136 hours = 4.53 ECTS</p>
Credit points:	3 SKS (4.53 ECTS)
Prerequisite's course(s):	-
Course outcomes:	<p>After completing this course, the students have ability to:</p> <p>CO1: Describe basic concepts of integers, divisibility, GCD, LCM, Prime numbers, arithmetic basic theorems, Modular Arithmetic, Diophantine Equations, and Integer Functions.</p> <p>CO2: Interpret the concepts of integers, divisibility, GCD, LCM, Prime numbers, basic arithmetic theorems, Modular Arithmetic, Diophantine's Equations, and Integer Number Functions.</p> <p>CO3: Apply the concepts of integers, divisibility, GCD, LCM, prime numbers, basic arithmetic theorems, Modular Arithmetic, Diophantine's Equations, and Integer</p>

	<p>Functions in solving mathematical problems.</p> <p>CO4: Analyze problems related to the concept of integers, divisibility, GCD, LCM, prime numbers, basic arithmetic theorem, Modular Arithmetic, Diophantine's Equation, and Integer Number Functions.</p> <p>CO5: Show a responsible attitude towards working in groups and individually.</p>
Content:	<p>This course discusses:</p> <ol style="list-style-type: none"> <li>1. number system: integer and mathematical induction</li> <li>2. divisibility</li> <li>3. greatest common divisor</li> <li>4. least common multiple</li> <li>5. basic arithmetic theorems</li> <li>6. prime numbers</li> <li>7. modular arithmetic</li> <li>8. Diophantine's equations</li> <li>9. integer functions</li> </ol>
Study/exam achievements:	<p>Total Score = (30% x Midterm Exam Score) + (45% x Final Exam Score) + (20% x Assignment) (5% x Class Activities: Participation, Attitude, and Presence)</p> <p>The initial cut - off points for grades A, A-, B+, B, B-, C+, C, C-, and D should not be less than 85, 80, 75, 70, 65, 60, 55, 50, and 40 out of 100 respectively.</p> <p><b>Explanation:</b></p> <ol style="list-style-type: none"> <li><b>1. Midterm Exam</b> <ul style="list-style-type: none"> <li>✓ Midterm Exam is held at the 9<sup>th</sup> meeting</li> <li>✓ Midterm Exam is written exam (essay test) and carried out in the classroom with an implementation time of 120 minutes according to the module schedule.</li> </ul> </li> <li><b>2. Final Exam</b> <ul style="list-style-type: none"> <li>✓ Final Exam is held at the 16<sup>th</sup> meeting in</li> <li>✓ Final Exam is a written exam (essay test) and carried out in the classroom with an implementation time of 120 minutes which follows the Final Exam implementation schedule of the department.</li> </ul> </li> <li><b>3. Assignment</b> <ul style="list-style-type: none"> <li>✓ Assignments are given as exercise before Midterm Exam and before Final Exam.</li> <li>✓ Assignments are about analyzing problem in daily life and solve it with the concept of the content in number theory.</li> <li>✓ Assignments are given as structured assignment and it is submitted in limited time.</li> </ul> </li> <li><b>4. Affective Assessment</b> <ul style="list-style-type: none"> <li>✓ Affective asesment is held in every meeting by observing students' attitude in the classroom.</li> <li>✓ The assesment is based on the observation sheet by using the given scoring rubrics</li> </ul> </li> </ol>
Forms of media:	Whiteboard, Laptop, LCD Projector

Literature:	<ol style="list-style-type: none"> <li>1. Grigorieva, E. (2018). Methods of Solving Number Theory Problems. Jerman: Springer International Publishing.</li> <li>2. Hill, R. M. (2017). Introduction To Number Theory. Singapura: World Scientific Publishing Company</li> <li>3. Silverman, J. (2017). A Friendly Introduction to Number Theory (Classic Version). Britania Raya: Pearson.</li> <li>4. Burton, D. M. (2012). Elementary Number Theory. India: Tata McGraw-Hill Education.</li> <li>5. Rosen, K. H. (2011). Elementary Number Theory and Its Applications. Britania Raya: Addison-Wesley.</li> <li>6. Stein, W. (2010). Elementary Number Theory: Primes, Congruences, and Secrets: A Computational Approach. Amerika Serikat: Springer New York.</li> </ol>
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**PLO and CO mapping**

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
<b>CO1</b>	✓										
<b>CO2</b>	✓										
<b>CO3</b>	✓										
<b>CO4</b>	✓										
<b>CO5</b>										✓	