



MODULE HANDBOOK

Number Theory

BACHELOR DEGREE PROGRAM
DEPARTMENT OF MATHEMATICS
FACULTY OF SCIENCE AND DATA ANALYTICS
INSTITUT TEKNOLOGI SEPULUH NOPEMBER

MODULE HANDBOOK

Number Theory

Module name	Number Theory	
Module level	Undergraduate	
Code	KM184711	
Course (if applicable)	Number Theory	
Semester	Fall (Ganjil)	
Person responsible for the module	Drs. I Gusti Ngurah Rai Usadha, M.Si.	
Lecturer	Drs. I Gusti Ngurah Rai Usadha, M.Si.	
Language	Indonesia and English	
Relation to curriculum	Undergraduate degree program, elective , 7 th semester.	
Type of teaching, contact hours	Lectures, <60 students	
Workload	<ol style="list-style-type: none"> 1. Lectures : 2 x 50 = 100 minutes per week. 2. Exercises and Assignments : 2 x 60 = 120 minutes (2 hours) per week. 3. Private learning : 2 x 60 = 120 minutes (2 hours) per week. 	
Credit points	2 credit points (sks)	
Requirements according to the examination regulations	A student must have attended at least 80% of the lectures to sit in the exams.	
Mandatory prerequisites	Algebra I Algebra II	
Learning outcomes and their corresponding PLOs	<p>Course Learning Outcome (CLO) after completing this module,</p> <ol style="list-style-type: none"> 1. Students are able to explain the basic principles of the Theory they understand especially the apportionment and distribution algorithms. 2. Students are able to explain basic principles relating to the greatest partnership factor and the smallest of the Guild's alliances. 3. Students are able to relate Congruence Theorems to the problems of number theory. 	
Content	<p>In this course students will learn about the properties of sharing, the greatest partnership factor and the smallest multiplicity of Alliances, the Euclidean Theorem, and Bezout's identity. Relative Prime, Modular Algebra, Diophantine and Pell equations for China, congruence and application. Students will learn and be equipped to understand and to be able to explain the material taught in accordance with the</p>	

	<p>teaching materials and besides the students are able to identify daily problems related to number theory and skillfully solve the problem thoroughly.</p> <p>In this course students will study the following subjects: Division and division algorithms, division properties, the greatest common factor and the smallest multiplicity of alliances, Euclid's algorithm on the greatest common factor, Bezout's identity and its application, prime and relatively prime and the theorem Fermat, Algebra Modulo and inverse modulo, linear congruence relationships, Wilson's theorem, Diophantine Equations and Congressional Theorems and Chinese residual theorems.</p>
Study and examination requirements and forms of examination	<ul style="list-style-type: none"> • In-class exercises • Assignment 1, 2 • Mid-term examination • Final examination
Media employed	LCD, whiteboard, websites (myITS Classroom), zoom.
Reading lists	<p>Main:</p> <ol style="list-style-type: none"> 1. Gioia, A.A., "Theory of Numbers" Dover Pub., Chicago, 2001 2. Apostol, TM, "Introduction to Analytic Number Theory", ToppanCompany S.Pte. Ltd., Singapore, 1980 <p>Supporting reference:</p> <ol style="list-style-type: none"> 1. Ake Lindahl, L; Lectures on Number Theory; Uppsala, 2002 2. Stein, W; Elementary Number Theory; Harvard, UC San Diego; 2017

