

Module Descriptions

A **module** is a self-contained **learning unit** within a higher education program that includes thematically related courses and is assigned a **fixed number of credits**. It follows specific **learning objectives**, includes an **assessment component**, and contributes to achieving the qualifications of a degree program. In some countries, “modules” are also named “courses”.

Please provide a module description for each module. In addition to the compulsory and elective modules, this also includes credited internships and the final thesis.

Please summarize all module descriptions in one document (Module Handbook) and create a table of contents so that the modules can be found easily.

Module designation	<i>Number Theory and Its Applications</i>
Semester(s) in which the module is taught	2
Person responsible for the module	<i>Prof. Dr. Agus Maman Abadi, M.Si. Dr. Musthofa, S.Si., M.Sc.</i>
Language	<i>Indonesian.</i>
Relation to curriculum	<i>Elective.</i>
Teaching methods	<i>Lecture and discussion.</i>
Workload (incl. contact hours, self-study hours)	<i>Total workload is 90.67 hours per semester which consists of 100 minutes lectures, 120 minutes structured activities, and 120 minutes self-study per week for 16 weeks.</i>
Credit points	2
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<i>After taking this course the students have ability to:</i> <i>CO1. Demonstrate an understanding of Diophantine equations by explaining their concepts and solutions, and applying them to solve related problems.</i> <i>CO2. Demonstrate an understanding of the concept of congruence and apply it to solve related problems.</i> <i>CO3. Demonstrate an understanding of primitive roots and apply the concept to solve related problems.</i> <i>CO4. Demonstrate an understanding of the concept of cryptography and apply it to solve related problems.</i>
Content	<i>This course covers fundamental concepts and applications of number theory, including divisibility of integers, greatest common divisors, prime factorization, congruences, Fermat's Theorem and Wilson's Theorem, multiplicative functions, primitive roots, and cryptography.</i>
Examination forms	<i>Assignments and written examinations.</i>

Study and examination requirements	<i>The course assessment is divided into two main components:</i> Cognitive Assessment (50%) <i>This includes the following elements:</i> - Attendance: 0% - Quiz: 0% - Assignment: 0% - Midterm Exam (UTS): 25% - Final Exam (UAS): 25% Participatory Assessment (50%) <i>This includes:</i> - Case Study: 0% - Team-Based Project: 50% Total: 100%
Reading list	- Rosen, K. H., 2011, <i>Elementary Number Theory and Its Applications</i>, sixth edition, New Jersey : Addison-Wesley. - Burton, D.M., 2011, <i>Elementary Number Theory</i>, 7th edition, New York : Mc Graw-Hill.