UNIVERSITAS GADJAH MADA
Faculty of Mathematics and Natural Sciences
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Doctoral Program in Mathematics

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MODULE HANDBOOK
Doctoral in Mathematics

Module name:	Finite Field
Module level, if applicable:	Doctor Program
Code, if applicable:	MMM 5212
Semester(s) in which the module is taught:	First Year
Person responsible for the module:	Chair of Algebra Research Group
Lecturer(s):	Budi Surodjo
Language:	Bahasa Indonesia
Relation to curriculum:	Doctor Degree in Mathematics, Elective Courses
Credit points:	3 Semester Credit Unit
Type of teaching, contact hours:	3x50 minutes lectures, 3x50 minutes structured activities.
Workload:	• 3x50 minutes lectures, • 3x50 minutes structured activities, • 3x50 minutes individual study, • In 16 weeks per semester (including mid-term and final examinations). • Total: 144x50 minutes per semester.
Requirements according to the examination regulations:	NONE
Recommended prerequisites:	Before taking this course, students must have good and correct understanding in theory and application in groups, rings and linear algebra
Module objectives/intended learning outcomes:	After attending this lecture, students will have the knowledge and skills to: CO-1: Demonstrate understanding and ability to work on various types and concepts of finite Fields CO-2: Prove the fundamental theorems of Galois Theory and being able to use them on various systems. CO-3. Develop sufficient skills, competencies, and thought processes to support further study or work in this field or in fields related to sequence relations
Content:	Finite Field, Extension Field, Extension Algebra, Splitting Field, Algebraically closed, Separable and Inseparable Extensions of finite field, Galois Field, Fundamental Theorem of Galois Theory,
Study and examination requirements and forms of examination:	The final mark will be weighted as follows: No — Assessment methods (components, activities) — Weight (percentage) 1 — Final Examination — 35% 2 — Mid-term Examination — 30% 3 — Projects/Homework — 20% 4 — Quiz — 15% Final grade will be determined as follows: Grade Criteria A : $95 \leq$ final mark ≤ 100 A- : $90 \leq$ final mark < 95 A/B : $85 \leq$ final mark < 90 B+ : $80 \leq$ final mark < 85 B : $70 \leq$ final mark < 80

	B- : 60 ≤ final mark < 70 C+ : 50 ≤ final mark < 60 C : 40 ≤ final mark < 50 D : 30 ≤ final mark < 40 E : 0 ≤ final mark < 30
Media employed:	White/Black Board, LCD Projector, Laptop/Computer
Reading List:	Referensi: 1. Cox, DA, 2004; *Galois Theory*, John Wiley & Son, Inc., Hoboken New Jersey 2. Dummit, D.S. and Foote, R.M., 2004; *Abstract Algebra*, 3rd Ed., John Wiley & Son, Inc. 3. Mullen, G.L. and Panario D., 2013; *Handbook of Finite Fields*, CRC Press, Taylor & Francis Group, London.

Mapping of The COs and PLOs

	PLO – 1 **S3 Mat**	**PLO – 2** **S3 Mat**	**PLO – 3** **S3 Mat**	**PLO – 4** **S3 Mat**	**PLO – 5** **S3 Mat**	**PLO –6** **S3 Mat**
CO 1	√		√			
CO 2	√	√	√		√	
CO 3		√	√		√	

Programme Learning Outcomes (PLO) Doctoral Programme in Mathematics

PLO-1	:	Attitude: Devote to God Almighty, uphold the humanity values, internalize academic values and ethics, responsible in working in the area of expertise independently.
PLO-2	:	Knowledge: Mastering philosophy of mathematics and one of the fields in mathematics (algebra, analysis, applied mathematics, statistics, computational mathematics, computational statistics).
PLO-3	:	Knowledge: Able to think logically, analytically, inductively, deductively, and structured; having the ability to manage, lead, and develop research programs independently, and able to communicate the thoughts as well as his work to the scientific community and the general public.
PLO-4	:	Skill: Creating new concepts and / or new methods (original) in the field of mathematics that are recognized nationally and internationally.
PLO-5	:	Skill: Able to apply mathematics according to their field of expertise to solve problems including those that require a multidisciplinary, cross-disciplinary, or trans-disciplinary approach.
PLO-6	:	Life Long Learning: Having lifelong learning skills and adaptive to the development of science and technology, especially in fields related to Mathematics and its applications.