Module Description/Course Syllabi

Study Programme: Bachelor of Mathematics
Faculty of Mathematics and Natural Sciences
Universitas Andalas

1. *Course number and name*

MAT62215 Introduction to Module Theory

2. *Credits and contact hours/Number of ECTS credits allocated*

3 sks / 4,53 ECTS

3. *Instructors and course coordinator*

Nova Noliza Bakar, M.Si

4. *Text book, title, author, and year*

1. Blyth, T. S., Module Theory: An Approach to Linear Algebra, Electronic Edition, St Andrews-USA, 2018

5. *Recommended reading and other learning resources/tools*

2. Adkins,W. A., and Weintraub, Algebra an Approach via module Theory, Springer-Verlag. 1992

6. *Specific course information*

A. Brief description of the content of the course (catalog description)

In this course, mathematical concepts will be discussed in the form of definitions and mathematical properties in the form of lemmas and theorems related to Modules, which include: ring modules, submodules, direct added products, factor modules, module homomorphisms, types of module homomorphisms, bases and free modules, annhilator and torque modules, exact series, projective modules, and ideal invertibles.

B. Prerequisites or co-requisites
MAT62112 Algebraic Structures MAT62121 Elementary Linear Algebra
C. Indicate whether a required or elective course in the program
Elective Course
D. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)
First Cycle Bachelor
E. Year of study when the course unit is delivered (if applicable)
3rd year
F. Semester when the course unit is delivered
6th semester
G. Mode of delivery (face-to-face, distance learning)
Face to face

7. Intended Learning Outcomes
ILO-3: An ability to identify, explain and generalise simple mathematical PI-2: An ability to explain simple mathematical problems PI-3: An ability to generalise simple mathematical problems
ILO-5: An ability formally and correctly proves a simple mathematical statements using facts and methods that have been studied PI-1: An ability to identify the formal structures and analogy forms in

mathematics PI-2: An ability to use fact and apply methods in proving simple mathematical statement PI-3: An ability to present simple mathematical statement proof rigorously (sequentially and conscientious)
ILO-9: An ability to apply knowledge of mathematics in career and involve in life long learning PI-1: Able to carry out learning independently to deepen and expand the knowledge that has been obtained PI-2: Able to carry out literature studies
8. Course Learning Outcomes
1. Able to explain the meaning of ring modules, submodules and factor modules
2. Be able to explain the meaning of module homomorphism and module isomorphism
3. Able to explain the meaning of free module, annhilator, and torque module
4. Able to explain the meaning of projective module
9. Brief list of topics to be covered
Modules, submodules, submodules built by a set, module homomorphisms, types of module homomorphisms, bases and independent modules, annhilator and torsion modules, exact sequences, projective modules, and ideal invertibles.
10. Learning and teaching methods
Directed Learning, Teacher Center Learning
11. Language of instruction
Indonesian and English

12. Assessment methods and criteria
Summative Assessment : 1. Mid-term exam: 30% 2. Final exam: 30% 3. Quiz: 20% 4. Assignment: 20% **Formative Assessment**: -