Module Description/Course Syllabi

Study Programme: Bachelor of Mathematics
Department of Mathematics and Data Science
Faculty of Mathematics and Natural Sciences
Andalas University, Padang, Indonesia

1. *Course code and name*

MAT622242 Introduction to Game Theory

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

3 credits / 4,53 ECTS

3. *Instructors and course coordinator*

1. Dr. Ahmad Iqbal Baqi

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

1. Osborne, Martin J. 2000. *An Introduction to Game Theory*. Oxford: Oxford University Press
2. Tadelis, Steven. 2013. *Game Theory: An Introduction*. Princeton University Press
3. Barron, E. N. 2013. *Game Theory: An Introduction,* 2nd Edition. Oxford University Press

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

Erickson, K.H., 2013. *Game Theory: A Simple Introduction*. Amazon Digital Service LLC.

6. *Specific course information*

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

This course is a part of Operational Research in the field of Applied Mathematics. (Introduction to) Game Theory is another form of optimization. (Procedure/process) optimization whose (outcome) is not certain or not optimized. Because the realm of

this theory is conflict, fighting, and strategic games being played; then the outcomes include those who win do not necessarily achieve maximum wins and those who lose do not suffer too many losses; The win-win solution is not to seek mutual victory, but rather to achieve stability or balance for each player.

B. Prerequisites or co-requisites

C. Indicate whether a required or elective course in the program

Required

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)

1 year

F. Semester when the course unit is delivered

Even Semester

G. Mode of delivery (face-to-face, distance learning)

Face to face

7. Intended Learning Outcomes

ILO-1: Possesses a good ethics and integrity
PI-1: An ability to explain academic ethics and integrity
PI-2: An ability to act in accordance with academic ethics
PI-3: An ability to act in accordance with academic integrity

ILO-3: An ability to identify, explain and generalize simple mathematical PI-1: An ability to identify simple mathematical problems PI-2: An ability to explain simple mathematical problems PI-3: An ability to generalize simple mathematical problems
ILO-4: An ability to use concepts and fundamental techniques of mathematics in solving simple mathematical problems. PI-1: Able to choose the right basic mathematical concepts and techniques in solving simple math problems; PI-2: Able to illustrate simple mathematical problems based on appropriate basic mathematical concepts and techniques.
8. *Course Learning Outcomes*
1. Students are able to design and interpret algorithms of Combinatorial Games
2. Students are able to determine the balance value of pure strategy and mixed strategy in the Zero Sum-Games
3. Students are able to determine the balance value of pure strategy and mixed strategy in the General Sum-Games
4. Students are able to determine the solution of various Sequential Games
5. Students are able to determine the solution of various Voting dan Cooperative Games
6. Students are able to conclude and interpret Mind Games
9. *Brief list of topics to be covered*
Combinatorial Games, Zero Sum-Games, General Sum-Games, Sequential Games, Voting, Cooperative Games, and Game Theory in Bible.
10. Learning and teaching methods
Directed Learning, Teacher Centre 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. Homework: 20% **Formative Assessment**: