Module Description/Course Syllabi

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

1. *Course number and name*

MAT61233 Capita Selecta of Combinatorics 2

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

3 SKS / 4.52 ECTS

3. *Instructors and course coordinator*

1. Dr. Lyra Yulianti, 2) Dr. Des Welyyanti

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

1. Chartrand, G., Zhang, P., *Introduction to Graph Theory*, McGraw-Hill, New York, 1st ed, 2005
2. Chartrand, G., Zhang, P., *Chromatic Graph Theory*, CRC Press, Taylor and Francis Group, New York, 1st ed, 2009

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

Recent papers in metric dimension, partition dimension, and locating chromatic numbers

6. *Specific course information*

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

This course discusses about the metric dimension, partition dimension and locating chromatic number of a graph. This course also gives some newest results related to metric dimension, partition dimension and locating chromatic number.

B. Prerequisites or co-requisites

MAT Introduction to Graph Theory, MAT62131 Discrete Mathematics
C. Indicate whether a required or elective course in the program
Elective
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
Even Semester
G. Mode of delivery (face-to-face, distance learning)
Face to face

7. *Intended Learning Outcomes*
ILO-2: Possesses profound knowledge of the basic concept mathematics PI-1: An ability to explain basic mathematical concepts PI-2: An ability to provide examples that are relevant to basic mathematical concepts PI-3: An ability to determine solutions to simple problems using basic mathematical concepts
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 concept and fundamental technique of mathematics in solving simple mathematical problems

PI-1: An ability to illustrate simple mathematical problems based on appropriate basic mathematical concepts and techniques

PI-2: An ability to illustrate simple mathematical problems based on appropriate basic mathematical concepts and techniques

PI-3: An ability to solve simple mathematical problems using the proper concept and mathematical fundamental techniques

ILO-5: An ability formally and correctly proves a simple mathematical statement using facts and methods that have been studied.

PI-1: An ability to identify formal structures and analogous forms in mathematics

PI-2: An ability to use facts and apply methods to prove simple mathematical statements

PI-3: An ability to present simple mathematical statement proof rigorously (sequentially and conscientious)

PI-4: An ability to conclude or interpret result of the proving simple mathematical statement

ILO-6: Have ability data literacy and technology and can apply them in solving simple mathematical problems or other relevant fields

PI-1: Able to identify the right data and technology to solve simple mathematical problems or other fields

PI-2: Able to use data and technology and apply them to solve simple mathematical statements or other areas

PI-3: Able to process data using available technology in simple mathematical problems or other fields

PI-4: Able to conclude and interpret data processing results for simple mathematical problems or other fields

PI-5: Able to design an algorithm to solve simple mathematical problems or other fields

8. *Course Learning Outcomes*

Have the understanding about the metric dimension of a graph and determine the metric dimension of a given graph.

Have the understanding about the partition dimension of a graph and determine the partition dimension of a given graph

Have the understanding about the locating chromatic number of a graph and determine the locating chromatic number of a given graph

9. *Brief list of topics to be covered*

1. Connectivity
2. Metric dimension of a graph
3. Partition dimension of a graph
4. Coloring in Graphs: Vertex, edge, and map colorings
1. Vertex-chromatic, edge-chromatic, and locating chromatic number of graphs

10. Learning and teaching methods
Project-Based Learning, Student Centre Learning
11. Language of instruction
Bahasa

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