



Module Description/Course Syllabi

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

1. *Course number and name*

MAT62233 Capita Selecta of Mathematic Combinatorics 1

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

3 sks / 4,53 ECTS

3. *Instructors and course coordinator*

1. Dr. Lyra Yulianti; 2. Dr. Des Welyyanti

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

1. Chartrand, G., Zhang, P., *Introduction to Graph Theory*, McGraw-Hill, New York, 1st ed, 2005
2. Baca, M., Miller, M., *Super Edge-Antimagic Graphs: A Wealth of Problems and Some Solutions*, Brown Walker Press, 2008

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

The latest papers are related to magic labeling, anti-magic labeling and rainbow connection numbers

6. *Specific course information*

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

In this course, several concepts in graph theory are discussed, including several types of labeling on graphs, including magic, anti-magic and magic total labels, as well as the concepts of Rainbow Connection and Strong Rainbow Connection numbers. Next, some of the latest results related to these topics are presented

B. Prerequisites or co-requisites

MAT62131 Discrete Mathematics, MAT61231 Introduction to Graph Theory

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)

2nd Year

F. Semester when the course unit is delivered

Even Semester

<i>G. Mode of delivery (face-to-face, distance learning)</i>
Face to face
<i>7. Intended Learning Outcomes</i>
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; PI-3: Able to solve simple mathematical problems using appropriate basic mathematical concepts and techniques.
ILO-5: An ability to formally and correctly prove simple mathematical statements using facts and methods that have been studied. PI-1: Be able to identify formal structures and forms of analogy in mathematics; PI-2: Able to use facts and apply methods in proving simple mathematical statements; PI-3: Able to present a rigorous proof of simple mathematical statements (with a trace and thorough); PI-4: Able to conclude or interpret the results of proving simple mathematical statements.
<i>8. Course Learning Outcomes</i>
1. Student have an understanding of the concept of connectivity, rainbow connection numbers and strong rainbow connections; and can determine the number of rainbow connections and strong rainbow connections from a given graph.
2. Student have an understanding of the concepts of magic-edge (super) labeling, magic-vertex (super) labeling, magic-total (super) labeling; and can determine labeling with the required properties for a given graph
3. Student have an understanding of the concepts of (super)(a,d)-edge-anti-magic labeling, labeling (super)(a,d)-vertex-anti-magic; and can determine labeling with the required properties for a given graph
<i>9. Brief list of topics to be covered</i>
<ul style="list-style-type: none"> • Connectivity and edge coloring • Rainbow Connection Number and Strong Rainbow Connection • Labelling on graphs: edge labelling, vertex labelling and total labelling • Magic labelling: Magic edge labelling, magic vertex labelling, magic total labelling, magic constant (a,d)-anti magic labelling: (a,d)-anti magic labelling, (a,d)-anti magic labelling
<i>10. Learning and teaching methods</i>
Directed Learning, Teacher Center Learning
<i>11. Language of instruction</i>
Bahasa Indonesia

12. Assessment methods and criteria

Summative Assessment :

1. Mid-term exam: 30%
2. Final exam: 30%
3. Assignment: 20%
4. Quiz: 20%

Formative Assessment: -