UNIVERSITAS NEGERI PADANG
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
MATHEMATICS DEPARTMENT, MATHEMATICS STUDY PROGRAM
Main Campus Universitas Negeri Padang.
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Bachelor of Science in Mathematics   MODULE HANDBOOK

Module name:	Graph Theory
Module level, if applicable:	Bachelor
Code:	MAT2.62.6006
Subheading, if applicable:	-
Classes, if applicable:	Graph Theory
Semester:	6th (Sixth)
Module coordinator:	Head of Applied Mathematics Expertise Group
Lecturer(s):	Dr. Edwin Musdi, M.Pd., and Defri Ahmad, S.Pd., M.Si.
Language:	Indonesian Language and English
Classification within the curriculum:	Elective course in the third year (6st semester) Bachelor Degree
Teaching format / class hours per week during the semester:	a. Lectures : Cooperative learning with methods such as expository, drill, and discussion. (3 x 50 minutes = 150 minutes) b. Structured assignment : Weekly individual written assignment. (3 x 60 minutes = 180 minutes). c. Individual study (3 x 60 minutes = 180 minutes)
Workload:	The total workload is 136 hours per semester, which consists of 150 minute lectures, 180 minute structured activities, and 180 minutes of self-study. In total, there are 16 weeks per semester, including midterm and final exams.
Credit points:	3 sks = 4.53 ECTS
Prerequisites course(s):	Discrete Mathematics
Course Outcomes:	After completing this course, the students have ability to: CO 1. Prove some properties of graph CO 2. Problem solving skill using procedure in graph theory CO 3. Apply graph theory in simple mathematical modelling

Content	Basic concept of graph theory, Simple Graph, Multiple Graph, Isomorphic Graph, Types of Graph, Complement of Graph, Planar Graph, Euler Formula, Subgraph, Connected Graph, Path, Trail, Circuit, Cut sets, Bridge of Konigsberg, Eulerian Graph, Eulerian Trail, Hamiltonian Graph, Tree, Minimum spanning tree, Kruskal Algorithm, Prime Algorithm, Planarity and Duality, Coloring of Graph, Directed Graph, Pruning Algorithm, Matrix and Graphs/Digraphs, PERTH-Graph and Shortest Distance Tree
Study/ exam achievements:	The final grade will be weighted as follows: The assessment consists of a final exam (35%), a mid-term exam (30%), assignment (20%), and class activities: discussion (15%). The final and midterm exams are essay tests with a closed book (120 minutes). Weekly assignments (solving selected problems) are given in two forms; group or individual assignments. Presentations, held in the classroom after collecting the group task, are focused on the performance of group members.
Forms of media:	White Board, laptop, Projector, e-learning via elearning2.unp.ac.id, and zoom meeting.
Literature:	1. Gary Chartrand G., Ping Zhang, 2012, A First Course in Graph Theory, Dover Publications 2. Joan M. Aldous, Robin J. Wilson, 2000, Graph and Applications: An Introdutory Approach, Springer, London.

PLO and CO Mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
CO1				✔						
CO2									✔	
CO3			✔							