UNIVERSITAS GADJAH MADA

Faculty of Mathematics and Natural Sciences

Mathematics Department

Undergraduate Programme in Mathematics

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MODULE HANDBOOK

Module name	Introduction to Graph Theory
Module level, if applicable	Bachelor
Code, if applicable	MMM-2206
Subtitle, if applicable	
Courses, if applicable	
Semester(s) in which the module is taught	4th (fourth)
Person responsible for the module	Chair of the Lab. of Algebra
Lecturer(s)	Dr. rer.nat. Indah Emilia, M.Si. Dr. rer. nat. Yeni Susanti, M.Si. Dr. Budi Surodjo, M.S.
Language	Bahasa Indonesia
Relation to curriculum	Bachelor Degree, Elective Course, 4th semester
Type of teaching, contact hours	150 minutes lectures, 180 minutes structured activities.
Workload	Total workload is 136 hours per semester, which consists of 150 minutes lectures per week for 14 weeks, 180 minutes structured activities per week, 180 minutes individual study per week, in total is 16 weeks per semester, including mid exam and final exam.
Credit points	3
Requirements according to the examination regulations	Students have taken Introduction to Graph Theory course (MMM-2206) and have an examination card where the course is stated on.
Recommended prerequisites	Students have taken Discrete Mathematics II course (MMM-2207) and have participated in the final examination of the course.
Module objectives/intended learning outcomes	After completing this course the students should have : CO 1. ability to prove some properties of graph. CO 2. ability in problem solving skill using procedure in graph theory CO 3. ability to apply graph theory in simple mathematical modelling
Content	Basic consept of graph theory, Simple Graph, Multiple Graph, Isomorphic Graph, Types of Graph, Complement of Graph, Planar Graph, Euler Formule, 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, Prunning Algorithm, Matrix and Graphs/Digraphs, PERTH-Graph and Shortest Distance Tree.
Study and examination requirements and forms of examination	The final mark will be weighted as follows: No Assessment methods (components, activities) Weight (percentage) 1 Final Examination 40% 2 Mid-Term Examination 30% 3 Class Activities: Quiz, Homework, etc. 30% The initial cut-off points for grades A, B, C, and D should not be less than 80%, 70%, 50%, and 40%, respectively.
Media employed	Projector, Board
Reading List	1. Robin J. Wilson, 1972; *Introduction to Graph Theory*, Longman Group Limited. 2. Joan M. Aldous, Robin J. Wilson, 2000, *Graph and Applications: An Introdutory Approach*, Springer, London.

3. Seymour Lipschutz, 1976; *Theory and Problems of Discrete Mathematics; Schaum's OutlineSeries*; McGraw-Hill Book Company.
4. B. Andrasfai, 1977, *Introductory Graf Theory*, Acade'miai Kiado', Budapest
5. RMJT Soehakso, *Teori Graf*, FMIPA UGM.

PLO and CO Mapping

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9
CO 1			v		v	v	v		v
CO 2		v			v				
CO 3					v				