

COURSE: DISCRETE MATHEMATICS (3 Credits)

CODE: MT 309

Description: A discrete mathematics course has more than one purpose. Students should learn a particular set mathematical fact and how to apply them; more importantly, such a course should teach student how to think logically and mathematically.

The material included in this course are understanding of graphs and graph models, representing graphs and special types of graphs, walks, paths and cycles, Euler and Hamilton paths, planar graphs, trees, graph colouring, relations and their properties, representing relations,, equivalence relations, partial orderings and lattice.

Prerequisite: -

- Resources:**
1. Kenneth.H. Rosen. (2007). Discrete Mathematics and its applications. Singapore: McGraw-Hill Companies Inc.
 2. Robin J. Wilson (1996). Introduction to Graph Theory. London: Longman Group Ltd.
 3. Heri Sutarno, Nanang Priatna, dan Nurjanah (2005). Matematika Diskrit.Malang: JICA IMSTEP.
 4. F. Harary (1969). Graph Theory. Addison-Wesley.
 5. Narsingh Deo ((1974). Graph Theory with Applications to Engeering and Compoter Science. Prentice Hall.

**DEPARTEMENT OF MATHEMATICS EDUCATION
FACULTY OF MATHEMATICS EDUCATION AND SCIENCE – INDONESIA UNIVERSITY OF EDUCATION**

**SILLABUS
COURSE: DISCRETE MATEMATICS (3 credits)
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WEEK	TOPIK AND SUB TOPIK	GOAL	OBJECTIVE	MATERIAL	METHOD & APPROACH	INSTRUMENT	TEST	RESOURCES
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Graphs and Graph Models	The students can Understand the meaning of graph and various of graph models	The purpose of this course are the students be able to: 1.1. express definition of graph 1.2. make several examples of graph and no graph	1. The meaning of graph	Expository, question-answer method, and task giving.	OHP or LCD, computer, and white board.	Task 1	1. Kenneth.H. Rosen. (2007). Discrete Mathematics and its applications. Singapore: McGraw-Hill Companies Inc.
2	Graph Terminology and Special Types of Graphs	The students can understand some terminology that describes the vertices and edges of undirected graphs and special types of graphs	The purpose of this course are the students be able to: 2.1. express definition of adjacentin G 2.2. express definition of isolated vertex 2.3. express definition of pendant vertex 2.4. express definition of degree of vertex 2.5. proof the handshaking	2. Adjacency 3. Isolated Vertex 4.Pendant Vertex 5. Degree of vertex				2. Robin J. Wilson (1996). Introduction to Graph Theory.

			theorem 2.6. introduce several classes of simple graphs					London: Longman Group Ltd.
3	Representing Graphs	The students can Understand the meaning of adjacent matrices, incidence matrices and isomorphism	3.1. express definition of adjacency matrices 3.2. express definition of incidence matrices 3.3. express definition of isomorphism	6.adjacency matrices 7. incidence matrices 8.isomorphis				3. Heri Sutarno, Nanang Priatna, dan Nurjanah (2005). Matematika Diskrit.Malang: JICA IMSTEP.
4	special types of graphs	The students can Understand meaning of special types of graphs	4.1. express definition of simple graph 4.2. express definition of bipartite graph 4.3. express definition of sub graph	9. simple graph 10. bipartite graph 11. sub graph				4. F. Harary path(1969). Graph Theory. Addison-Wesley.
5	Walks, Paths and cycles	The students can Understand meaning of walks, paths, and cycles	5.1. express definition of walks 5.2. express definition of paths 5.3. express definition of cycles	12. walks 13. paths 14. cycles				5. Narsingh Deo ((1974). Graph Theory with Applications to
6	Euler and Hamilton paths	The students can Understand meaning of euler and	6.1. express definition of euler and Hamilton paths	15. euler graph 16. Hamilton graph				

7	Planar Graphs	Hamilton path The students can Understand meaning of planar graph	7.1. express definition of planar graph	17. planar graph					Engineering and Computer Science. Prentice Hall.
8	Tree and Graph Coloring	The students can Understand meaning of tree and graph coloring	8.1. express definition of tree 9.1. express definition of colouring vertices 9.2. express definition of colouring maps 9.3. express definition of edges	18. Tree 19. colouring vertices 20. colouring maps 21. colouring edges					
9	MID SEMESTER TEST								

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
10	relations and their properties		10. determine requirement of relations and their properties	21. refleksif, symmetri c, antisym metric, transitive	Expository, question-answer method, and task giving.	OHP or LCD, computer, and white board.	Task 2	1. Kenneth.H. Rosen. (2007). Discrete Mathematics and its applications. Singapore: McGraw-Hill Companies Inc.
11	representing relations		11.1. Representing Relations using matrices 11.2. Representing Relations Using Digraphs	22. Relations 23. Equivqlence relations				
12	equivalence relations		12.1. determine requirement of equivalence relations	24. Partial Ordering 25. Lettice				
13	partial orderings		13.1. determine requirement of partial orderings					
14	Lettices		14.1. determine requirement of lettices					
15	Give exercises for checking the students' understanding about the material and discussion (responses)				Question-answer method and	White board		

		discussion			
16	FINAL TEST				

Approved by:

Dean assistant 1

Head of Mathematics Education Program

Bandung, September 2009

Lecturer

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