School of Computing and Information Sciences

Course Title: Graph Theory **Date:** 3/20/10

Course Number: MAD-3305

Number of Credits: 3

Subject Area: Foundations	**Subject Area Coordinator:** Geoffrey Smith **email:** smithg@cis.fiu.edu
Catalog Description: An introduction to the study of graphs. Topics include the following: paths and circuits, connectedness, trees, shortest paths, networks, planar graphs, the coloring of graphs, and directed graphs. Applications of graphs to computer science will be discussed.	
Textbook:	
References:	
Prerequisite Courses: COP 2210 or CGS 2420 and either MAS 3105 or MAD 2104	
Corequisite Courses: None	

Type: Elective

Prerequisites Topics:

Course Outcomes:

1. Master paths and connectedness in directed and undirected graphs
2. Master graphs that are trees
3. Master shortest path algorithms for weighted and unweighted graphs
4. Be familiar with planar and colored graphs
5. Be familiar with applications of graphs to computer science

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Relationship between Course Outcomes and Program Outcomes

BS in CS: Program Outcomes	Course Outcomes
a) Demonstrate proficiency in the foundation areas of Computer Science including mathematics, discrete structures, logic and the theory of algorithms	1, 2, 3, 4, 5
b) Demonstrate proficiency in various areas of Computer Science including data structures and algorithms, concepts of programming languages and computer systems.	1, 2, 3, 4, 5
c) Demonstrate proficiency in problem solving and application of software engineering techniques	
d) Demonstrate mastery of at least one modern programming language and proficiency in at least one other.	
e) Demonstrate understanding of the social and ethical concerns of the practicing computer scientist.	
f) Demonstrate the ability to work cooperatively in teams.	
g) Demonstrate effective communication skills.	

Assessment Plan for the Course & how Data in the Course are used to assess Program Outcomes

Student and Instructor Course Outcome Surveys are administered at the conclusion of each offering, and are evaluated as described in the School's Assessment Plan: http://www.cis.fiu.edu/programs/undergrad/cs/assessment/

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Outline

Topic	Number of Lecture Hours	Outcome

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Course Outcomes Emphasized in Laboratory Projects / Assignments

Outcome	Number of Weeks

Oral and Written Communication

No significant coverage

Written Reports		Oral Presentations	
Number Required	Approx. Number of pages	Number Required	Approx. Time for each
0	0	0	0

Social and Ethical Implications of Computing Topics

No significant coverage

Topic	Class time	student performance measures

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Approximate number of credit hours devoted to fundamental CS topics

Fundamental CS Area	Core Hours	Advanced Hours
Algorithms:		
Software Design:		
Computer Organization and Architecture:		
Data Structures:		
Concepts of Programming Languages		

Theoretical Contents

Topic	Class time
Graph theory	40 hours

Problem Analysis Experiences

Solution Design Experiences

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The Coverage of Knowledge Units within Computer Science Body of Knowledge[1]

Knowledge Unit	Topic	Lecture Hours

[1]See http://www.computer.org/education/cc2001/final/chapter05.htm for a description of Computer Science Knowledge units