

UNIVERSITY COLLEGE OF THE FRASER VALLEY

COURSE INFORMATION

DISCIPLINE/DEPARTMENT: Mathematics and Statistics **IMPLEMENTATION DATE:** July 1994

Revised: December 1998

<u>MATH 445</u>	<u>Introduction to Graph Theory</u>	<u>3</u>
SUBJECT/NUMBER OF COURSE	DESCRIPTIVE TITLE	UCFV CREDITS

CALENDAR DESCRIPTION: An introduction to graph theory and its applications.

RATIONALE:

COURSE PREREQUISITES: MATH 225

COURSE COREQUISITES: None

HOURS PER TERM FOR EACH STUDENT	Lecture & Laboratory Seminar Field Experience	60	hrs hrs hrs hrs		Student Directed Learning Other - specify:	hrs hrs HRS
				TOTAL	<u>60</u>	

MAXIMUM ENROLMENT: 35

Is transfer credit requested? **9** Yes : No

AUTHORIZATION SIGNATURES:

Course Designer(s): <u>Math Curriculum Committee</u>	Chairperson: _____ (N. Weinberg) S. Curriculum Committee (E. Davis) Arts Curriculum Committee
Department Head: <u>S. Milner</u>	Dean: <u>K. Wayne Welsh</u>
PAC: Approval in Principle _____ (Date)	PAC: Final Approval: <u>December 16, 1998</u> (Date)

MATH 445**NAME & NUMBER OF COURSE**

SYNONYMOUS COURSES:(a) replaces N/A
(course #)(b) cannot take N/A for further credit
(course #)**SUPPLIES/MATERIALS:****TEXTBOOKS, REFERENCES, MATERIALS (List reading resources elsewhere)**Graph Theory with Applications
Bondy and Murty
Elsevier Press**OBJECTIVES:****METHODS:****STUDENT EVALUATION PROCEDURE:**

Two midterm exams	40%
Homework	15%
Final exam	45%

COURSE CONTENT

1. Graphs and subgraphs: Isomorphism, subgraphs, adjacency matrix, paths, cycles and vertex degrees.
2. Trees: Cut-vertices, cut-edges and Cayley's formula.
3. Connectivity: Blocks and application of connectivity.
4. Eulerian graphs: Euler tours, Hamiltonian cycles and applications.
5. Matchings: Matchings, coverings and the assignment problem.
6. Edge and vertex colorings: Chromatic number, Vizing's Theorem, Brooks' Theorem and chromatic polynomials.
7. Independence: Independent sets, cliques, Ramsey's Theorem and applications.
8. Planar graphs: Plane and planar graphs, dual graphs, Euler's formula and Kuratowski's Theorem.