UNIVERSITY COLLEGE of the FRASER VALLEY

PAC FORM #2 (Page 1)

COURSE IMPLEMENTATION DATE: September 1997
COURSE REVISED IMPLEMENTATION DATE: September 1997
COURSE TO BE REVIEWED: September 2001
(Four years after implementation date) (MONTH YEAR format)

OFFICIAL COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department and the material will vary - see course syllabus available from instructor

FACULTY/DEPARTMENT: **MATH**

MATH 125		**4**
COURSE NAME/NUMBER	FORMER COURSE NUMBER	UCFV CREDITS

INTRODUCTION TO DISCRETE MATHEMATICS
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

Discrete math is a new and important part of mathematics, and is concerned primarily with the analysis and computational representation of 'finite structures'. Its applications are widespread in modern technology and include scheduling, network construction, data communications and computer engineering. This course serves as an introduction to some of the basic techniques of the discipline, including methods of counting, modular arithmetic, and formal logic. The focus of the course will be on formulating problems into mathematical models and on methods applicable to the analysis of these models.

PREREQUISITES: **A C or better in Math 12 (or its equivalent), a C or better in Applications of Math 12, a C or better in Math 095, or a B or better in Math 105.**
COREQUISITES: **None**

SYNONYMOUS COURSE(S)
(a) Replaces: **MATH 243** *(Course #)*
(b) Cannot take: _____ *(Course #)* for further credit.

SERVICE COURSE TO: _____ *(Department/Program)*
_____ *(Department/Program)*

TOTAL HOURS PER TERM: _____
STRUCTURE OF HOURS:

Lectures:	Hrs
Seminar:	Hrs
Laboratory:	Hrs
Field Experience:	Hrs
Student Directed Learning:	Hrs
Other (Specify):	Hrs

TRAINING DAY-BASED INSTRUCTION
LENGTH OF COURSE: _____
HOURS PER DAY: _____

MAXIMUM ENROLLMENT: **35**
EXPECTED FREQUENCY OF COURSE OFFERINGS: _____

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☒ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☐ No

AUTHORIZATION SIGNATURES:

Course Designer(s): Greg Schlitt
Chairperson: N/A *(Curriculum Committee)*
Department Head: Susan Milner
Dean: K. Wayne Welsh
PAC Approval in Principle Date:
PAC Final Approval Date: Noivember 27, 1996

LEARNING OBJECTIVES / GOALS / OUTCOMES / LEARNING OUTCOMES:

The primary objective is to provide the student with the background knowledge and skills necessary to begin understanding and using several of the fundamental techniques of modern applied mathematics. In particular a student should finish the course with facility in the basic counting arguments used to enumerate combinatorial objects, in the calculation and estimation of simple probabilities, and with a knowledge of the propositional calculus and its utility in a modern computing environment.

METHODS:

The course will be primarily lecture based, but the students should be given frequent opportunity to implement the ideas and techniques discussed in a computer environment, (for example Maple). Individual student research will be encouraged through the use of term projects.

PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

Credit can be awarded for this course through PLAR (Please check :) ☐ Yes ☐ No

METHODS OF OBTAINING PLAR:

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Ross & Wright, Discrete Mathematics, Prentice Hall, 1985.
Biggs, Discrete Mathematics, OUP, 1991
Tucker, Applied Combinatorics, 1984.

SUPPLIES / MATERIALS:

Access to computing labs with Maple license.

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Instructors have discretion over this, but a likely breakdown would see in-term exams, frequent assignments, a final exam, as well as one or two term projects.

Typically the final exam would count for 35% of the mark, in-term exams for 25% and assignments and projects for 40%.

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

Set Theory: Review of subsets, union, intersection, complement, etc.

Counting:
- Induction
- Sums and products
- Permutations and combinations
- Binomial theorem
- Inclusion/exclusion arguments
- Introduction to probability
- Pigeon hole principle
- Recurrence relations

Logical syntax/semantics:
- Informal versus formal arguments

- Propositional calculus: connectives etc.
- Boolean algebras, boolean functions, CNF, DNF, simplifying

Modular arithmetic.

Program correctness. (If time permits.)