UNIVERSITY COLLEGE of the FRASER VALLEY

COURSE IMPLEMENTATION DATE: September 1997
COURSE REVISED IMPLEMENTATION DATE: September 2002
COURSE TO BE REVIEWED: September 2006
(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: **MATHEMATICS & STATISTICS**

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

INTRODUCTION TO DISCRETE MATHEMATICS
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

Discrete mathematics 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: **C average or better in Math 094/095, or a B or better in Math 105, C or better in Principles of Math 12 (provincially examined), or applications of Math 12 with at least a B.**

Effective 2003, the prerequisites will be: C+ average or better in MATH 094/095, or C+ or better in Principles of MATH 12 (provincially examined), or Applications of Math 12 with at least a B.

COREQUISITES: **None**

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

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

TOTAL HOURS PER TERM: **75**
STRUCTURE OF HOURS:

Lectures:	**75**	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: **36**
EXPECTED FREQUENCY OF COURSE OFFERINGS: **Fall term.**

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: Greg Schlitt
Dean: J. Snodgrass
PAC Approval in Principle Date:
PAC Final Approval Date: November 28, 2001

LEARNING OBJECTIVES / GOALS / OUTCOMES / LEARNING OUTCOMES:

The successful student will be able to:

1. Understand and use basic counting arguments to enumerate combinatorial objects
2. Calculate and estimate simple probabilities
3. Understand and use the techniques of propositional calculus
4. Apply principles of elementary number theory

METHODS:

The course will be primarily lecture-based. 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:

Course Challenge

TEXTBOOKS, REFERENCES, MATERIALS:

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

The text is chosen by a departmental curriculum committee.

Recent text:
Grimaldi, *Discrete and Combinatorial Mathematics*, 4th Ed., Addison Wesley

SUPPLIES / MATERIALS:

Scientific calculator

STUDENT EVALUATION:

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

Assignments, Quizzes, Projects	20%
Midterm exam	40%
Final Exam	40%

A student must achieve at least 40% on the final exam in order to receive credit for this course.

COURSE CONTENT:

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

Set Theory 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

Number Theory:
- Modular arithmetic
- Primes and composites
- Linear diophantine equations