UCFV
UNIVERSITY COLLEGE of the FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: September 2008
COURSE REVISED IMPLEMENTATION DATE:
COURSE TO BE REVIEWED: May 2012
(four years after UPAC approval) *(month, year)*

OFFICIAL UNDERGRADUATE 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 – see course syllabus available from instructor

MATH 124	Mathematics	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UCFV CREDITS

Finite Math with Applications in the Information Sciences
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This class is intended to reinforce skills in algebra, graphing, and problem solving, and to provide a first introduction to some finite mathematical structures, algorithms, and techniques which are important in discrete math, statistics, and computer science. Topics include algebra and equations; power, polynomial, exponential, logarithmic, and root functions; graphing functions and inequalities; solving linear systems of equations; matrices and basic matrix arithmetic and algebra; use of linear programming to model problems; graphical solution methods for linear programming problems; sets and Venn diagrams; basic principles of probability; and basic counting techniques including combinations and permutations. Whenever possible, concepts will be motivated by applications in the information sciences.

PREREQUISITES: Principles of Math 11 with a C or better, or Principles of Math 12, or MATH 085 with a C or better, or MATH 094.

COREQUISITES:

PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*
CIS

TOTAL HOURS PER TERM: **60**

STRUCTURE OF HOURS:

Lectures:	**60**	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:

OTHER:
Maximum enrolment: **36**
Expected frequency of course offerings: annually
(every semester, annually, every other year, etc.)

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

Course designer(s): **Ian Affleck and Cynthia Loten**

Department Head:	**Gillian Mimmack**	Date approved:	**May 2008**
Supporting area consultation (UPACA1)		Date of meeting:	**May 9, 2008**
Curriculum Committee chair:		Date approved:	**May 2008**
Dean/Associate VP:	**Wanda Gordon**	Date approved:	**May 2008**
Undergraduate Program Advisory Committee (UPAC) approval		Date of meeting:	**May 23, 2008**

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

- solve basic algebraic equations in one variable
- determine and compare asymptotic behaviour of power, polynomial, exponential, root, and logarithmic functions, and solve equations and inequalities involving such functions with the aid of graphing technology
- solve linear inequalities in two variables and interpret the solution set graphically
- construct systems of linear equations from a variety of applications
- apply row reduction algorithms to solve small linear systems by hand
- perform basic arithmetic operations with matrices
- use technology to compute the inverse of a matrix
- formulate linear programming restriction sets in a variety of applications
- solve small linear programming problems by graphical methods
- apply Venn diagrams and basic principles of counting to solve elementary counting problems, including problems involving combinations and permutations
- apply basic principles of probability and counting to calculate the probabilities of events in simple applications

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lectures may be interspersed with problem sessions. Graphing calculators will be used. In addition, mathematical software may be used.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☒ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS: *[Textbook selection varies by instructor. An example for this course might be:]*

Lial, Hungerford, and Holcomb, *Finite Mathematics with Applications*, 9th edition, Pearson 2006
Lial, Greenway, and Ritchey, *Finite Mathematics*, 9th edition, Pearson 2008
Goldstein, Schneider, and Siegel, *Finite Mathematics & its Applications*, 9th edition, Pearson 2007

SUPPLIES / MATERIALS:

A graphing calculator will be required.

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

Quizzes and assignments	20%
Midterm exams	40%
Final exam	40%

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

1. Algebra and Equations:
   The real numbers; polynomials and factoring; rational expressions; exponents and radicals; linear and quadratic equations
2. Functions and Graphs:
   Linear, quadratic, polynomial, exponential, and logarithmic functions; graphs, end behaviour and applications of the above functions; running time of algorithms
3. Linear Algebra:
   Systems of linear equations; solutions by row reduction (by hand and using technology); matrix arithmetic and multiplication; matrix inverses; applications in information sciences
4. Linear Programming:
   Graphing linear inequalities in two variables; solutions by graphical methods; applications
5. Introduction to Set Theory:
   Sets; union, intersection and complement; Venn diagrams
6. Introduction to Counting and Probability:
   The multiplication principle; permutations and combinations; probability and odds; basic rules of probability