OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE:	September 1995
COURSE REVISED IMPLEMENTATION DATE:	January 2014
COURSE TO BE REVIEWED:	December 2020
(six years after UEC 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 125	Science/Mathematics & Statistics	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV 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: One of the following: (C+ or better in Principles of Math 12) or (C or better in one of MATH 124, MATH 096, Foundations of Mathematics 12, or Precalculus 12) or (C or better in both MATH 094 and MATH 095) or (B or better in Applications of Math 12) or (MATH 110).

COREQUISITES:

PRE or COREQUISITES:

SYNONYMOUS COURSE(S):

(a) Replaces:

(b) Cross-listed with:

(c) Cannot take: **MATH 243** for further credit.

SERVICE COURSE TO: *(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:

OTHER:

Maximum enrolment: **36**

Expected frequency of course offerings: Every fall and winter

(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):	**Greg Schlitt**		
Department Head:	**Cindy Loten**	Date approved:	**April 29, 2013**
Campus-Wide Consultation (CWC)		Date of meeting:	**n/a**
Curriculum Committee chair:	**Dave Fenske**	Date approved:	**June 21, 2013**
Dean/Associate VP:	**Lucy Lee**	Date approved:	**June 21, 2013**
Undergraduate Education Committee (UEC) approval		Date of meeting:	**September 27, 2013**

LEARNING OUTCOMES:

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

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

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

This course is primarily lecture based. Individual student research is encouraged through the use of term projects.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

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

☒ Other (specify): Please check online at http://www.ufv.ca/math/challenge.htm for the departmental challenge policy

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

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

The textbook is chosen by a departmental curriculum committee. Recent text used:
Grimaldi. *Discrete and Combinatorial Mathematics*. 4th edition. 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 obtain at least 40% on the final exam in order to pass this course.

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

Set Theory Counting:

a) induction
b) sums and products
c) permutations and combinations
d) binomial theorem
e) inclusion/exclusion arguments
f) introduction to probability
g) pigeon hole principle
h) recurrence relations

Logical Syntax/Semantics:

a) informal versus formal arguments
b) propositional calculus
c) Boolean algebras

Number Theory:

a) modular arithmetic
b) primes and composites
c) linear Diophantine equations