UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: September 1995
COURSE REVISED IMPLEMENTATION DATE: January 2009
COURSE TO BE REVIEWED: December 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 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 come of the basic techniques of the disciple, 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+ or better in Principles of Math 12; or a B or better in Applications of Math 12; or Math 110; or a C or better in Math 124; or a C or better in both Math 094 and Math 095.
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:		Date approved:	October 2008
Supporting area consultation (UPACA1)		Date of meeting:	October 10, 2008
Curriculum Committee chair:		Date approved:	November 2008
Dean/Associate VP:	Dan Ryan	Date approved:	November 21, 2008
Undergraduate Program Advisory Committee (UPAC) approval		Date of meeting:	December 12, 2008

LEARNING OUTCOMES:

Upon successful completion of this course, students 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: *(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): Course challenge

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

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts 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