UNIVERSITY COLLEGE OF THE FRASER VALLEY

COURSE INFORMATION

DISCIPLINE/DEPARTMENT: Mathematics

IMPLEMENTATION DATE:

Revised: September 1994

Math 103   Finite Mathematics   3
SUBJECT/NUMBER OF COURSE   **DESCRIPTIVE TITLE**   **UCFV CREDITS**

CALENDAR DESCRIPTION: The aim of this course is the development of the student through the exercise of the ability to refine thought as a logical, progressive process and the development of conceptual ability from the intuitive to the very structured level of thought. Topics covered include: sets, logic, groups, systems of linear equations and inequalities, combinatorics, elementary notions in probability, the Fibonacci sequence and fractals. The course is particularly recommended for education students and students of the social sciences.

RATIONALE: Exposes the students to logical and rational reasoning, and to some basic mathematical ideas which support other courses and careers, and which supplements educational topics.

COURSE PREREQUISITES: Math 11 or Math 084 or 084A before September 1992, or Math 085 with at least a C.

COURSE COREQUISITES:

HOURS PER TERM	Lecture	60	hrs	Student Directed		
FOR EACH	Laboratory		hrs	Learning		hrs
STUDENT	Seminar		hrs	Other - specify:		
	Field Experience		hrs			hrs
				TOTAL	60	HRS

MAXIMUM ENROLMENT: 35

Is transfer credit requested?   Yes   No

AUTHORIZATION SIGNATURES:

Course Designer(s): Math Curriculum Committee   **Chairperson**:

                Curriculum Committee

Department Head: Barry Garner Ph.D   **Dean**: J.D. Tunstall Ph.D

PAC: Approval in Principle _____   **PAC: Final Approval**:

       (Date)   **(Date)**

Math 103
NAME & NUMBER OF COURSE

SYNONOMOUS COURSES:

(a) replaces _____N/A_____
                        (course #)

(b) cannot take _____N/A_____ for further credit
                          (course #)

TEXTBOOKS, REFERENCES, MATERIALS   (List reading resources elsewhere)

Mathematical ideas (seventh edition), Charles D. Miller, Vern E. Heeren, E. John Hornsby, Jr. (Harper Collins, 1994)

OBJECTIVES:

To present a selection of topics in mathematics that are interesting and stimulating, that indicate methods of mathematical thinking, without involving the notion of limiting processes.

The course is particularly recommended for elementary education students for the perspective on mathematics that it will help to develop.

METHODS:

Traditional lectures and tutorial sessions

STUDENT EVALUATION PROCEDURE:

Assignments and Quizzes	15%
Midterm exams (3)	45%
Final exam	40%

<u>**Math 103**</u>
NAME & NUMBER OF COURSE

<u>**COURSE CONTENT**</u>

1. **Problem solving strategies**
   - **number patterns**
   - **inductive reasoning**

2. **Sets**
   - **basic concepts**
   - **Venn diagram and subsets**
   - **operations with sets**
   - **surveys and cardinal numbers**
   - **cardinal numbers of infinite sets**

3. **Logic**
   - **statements and quantifiers**
   - **truth tables**
   - **the conditional**
   - **using Euler diagrams to analyze arguments**
   - **using truth tables to analyze arguments**

4. **Numeration and mathematical systems**
   - **clock arithmetic and modular systems**
   - **other finite mathematical systems**
   - **groups**

5. **Number theory**
   - **the Fibonacci sequence and the golden ratio**

6. **Equations and inequalities**
   - **systems of (linear) equations and applications**
   - **systems of linear inequalities**

7. **Geometry**
   - **non-euclidean geometry, topology and networks**
   - **chaos and fractal geometry**

8. **Counting methods**
   - **counting by systematic listing**
   - **the fundamental counting principle**
   - **permutations and combinations**
   - **Pascal's triangle and the binomial theorem**
   - **counting problems with 'Not' and 'Or'**

9. **Probability**
   - **probability and odds**
   - **events with 'Not' and 'Or'**
   - **events with 'And'**
   - **binomial probability**