SIMON FRASER UNIVERSITY
SUMMER SEMESTER 2005

EDUC 411-3
INVESTIGATIONS IN SECONDARY MATHEMATICS
(D01.00)

DR. RINA ZAZKIS
Office: EDB 8661
Phone: 291-3662

TUESDAY 8:30-12:20 IN EDB 7500B

COREQUISITE:
EDUC 415 or appropriate mathematics background and permission of instructor

COURSE SCHEDULE:
This is a 3-credit course. To fulfill the requirement of 39 instructional hours (3x13) we will meet in a scheduled 4-hour slot for the first 10 weeks of the semester.

CATALOGUE DESCRIPTION:
Students examine secondary mathematics from an advanced standpoint, focusing on problem solving, investigating connections among various topics and representations, and situating secondary mathematics in a broader context, both mathematically and historically.

COURSE OUTLINE:
The goal of the course is to examine secondary mathematics from an advanced standpoint, to broaden the understanding of key topics by drawing connections among various topics and representations and by situating them in a broader context, both mathematical and historical. The means towards this goal is intensive problem solving experience, followed by reflection. The course will involve lecture, seminar and workshop format, without explicit distinction between the different formats.
The following is the list of topics to be addressed. The list is not sequential, as the connections among various topics are of interest in this course:

Numbers and Number systems
- *Number systems from different civilization
- *Number representations in different bases
- *Critical Number sets

Functions
- *Examination of various definitions for a function
- *Representation of functions in different coordinate systems
- *Transformation of functions

Geometry
- *Axiomatic systems (Euclidean, finite)
- *Geometry on a sphere, implications for the plane

*Taxicab Geometry, implications
*Investigations with Geometer's Sketchpad
*Conic Sections

Probability and Statistics
*Examination of popular games
*How to lie with Statistics - a critical look

(Some) Fascinating theorems and formulas of mathematics
*Where do they come from?
*Why do they "work"?
*What is fascinating about them?

COURSE REQUIREMENTS:

Students will be expected to attend all classes, and to participate fully in class work and discussions. Assignments include: Weekly homework, problem solving portfolio, project and presentation. Further details will be presented and discussed in class

GRADING:

The course is graded pass/withdrawal. Students must get a passing grade on each assignment in order to pass the course.

REQUIRED READING

No textbook for this course. Materials will be provided by the instructor. Duplicating fee: Approx. $15 will be collected.

Return to Education's Undergraduate 2005-2 Course Outlines Main Page.