SIMON FRASER UNIVERSITY

EDUCATION 475-4

DESIGNS FOR LEARNING: MATHEMATICS (SECONDARY)

D 1.00

Summer Session, 1989
(July 4 - August 11)
Wednesdays/Fridays
8:30 A. M. - 12:20 P. M.
Location: MPX 7500F

Instructor: Ed O'Regan
Office: MPX 8673
Phone: 291-3745 (Office)

PREREQUISITES: Education 401/402, or equivalent.

OBJECTIVES

To consider the role of the teacher and of mathematics in the secondary school curriculum. To acquire the expertise to deal confidently with the prescribed new curriculum in mathematics for schools in B.C. (to develop the teaching strategies required to implement the new curriculum and to revise relevant mathematical content). Among the prescribed changes that occur in the new mathematics curriculum at the junior and senior levels are the following: that content be integrated at most grade levels, that the use of manipulatives be encouraged, that problem solving be an integral part of all course work, that geometry be emphasized, that new topics in statistics be introduced at every grade level, and that computers be used at senior levels as a problem solving tool. Recent research on how best to teach a number of these topics will be reviewed.

On completion of the course, students should be able to:

Plan for instruction in mathematics. Construct a number of teaching and learning aids. Use a variety of manipulative materials such as geoboards and models. Apply some of the techniques of cooperative learning to the teaching of mathematics. Explore the use of language as a learning aid. Use a selection of evaluation techniques. Discuss the role of the teacher and mathematics in the secondary school curriculum.

OUTLINE OF TOPICS

* Learning theory and mathematics
* Statistics
* Measurement
* Technology
* Problem solving
* Real numbers
* Algebra
* Formal logic
* Geometry
* Algorithms
* Limits
* Evaluation/Remediation

(Planning for instruction, language as learning aid, and the appropriate use of manipulatives will be linked to each topic.)

TYPICAL REQUIREMENTS

Students are expected to attend all classes and to participate fully in classwork and discussions. Assignment topics will include: (a) problem solving; (b) lesson and unit planning; (c) a review of professional journals; (d) a classroom presentation; (e) review of authorized textbooks and resource books; (f) exercises involving algorithms and manipulatives.

TEXTBOOK: To be announced.