

SIMON FRASER UNIVERSITY
SPRING SEMESTER 2008
COURSE OUTLINE
EDUC 212-3
D100

Mathematical Experience II: Shape and Space

**STUDENTS WHO HAVE CREDIT FOR MATH 151, MATH 154, OR MATH 157
NEED SPECIAL PERMISSION TO PARTICIPATE IN THIS COURSE
CONTACT DR. PETER LILJEDAHN EMAIL: LILJEDAHN@SFU.CA FOR
PERMISSION**

**TUESDAY 9:30-1:20 PM
AQ 2122**

**INSTRUCTOR: P. LILJEDAHN
OFFICE: EDB 8662
TELEPHONE: 778-782-5643**

Course description:

This course explores a variety of mathematical topics in order to increase the mathematical literacy of Liberal Arts students in general, and to increase their capabilities for quantitative reasoning and deductive argumentation in particular. Our focus is on the issues of aesthetics and utility of mathematical experience, emphasizing the human experience in learning and doing mathematics.

Though the course content comes from mathematics, the approach is a pedagogical one, which draws on the knowledge and practices from education rather than applying the lecture/tutorial format most commonly seen in undergraduate mathematics courses. Students will engage in problem solving, investigate conjectures, and develop connections among mathematical topics.

The mathematical content chosen for these courses is flexible and in other settings may be considered as "enrichment". However, in-depth exploration of these topics provides an engaging opportunity to revisit and strengthen more basic concepts that lie at the heart of geometry. Topics include:

- The Golden Rectangle
- Platonic Solids and Euler's Formula
- Pythagoras
- Möbius Band and the Klein Bottle
- Fractals
- Knots and Not-Knots
- Symmetry
- Transformations and Tiling

Course requirements:

- Active participation
- Weekly homework
- Midterm exam

- Problem solving journal
- Collaborative project
- Final exam

Text:

Burger, E. B. and Starbird, M. (2005). *The Heart of Mathematics – Second Edition*. Key College Publishing.

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