Instructor: Dr. Gwenn E. Flowers  
(Email: gflowers@sfu.ca; Phone: 778-782-6638; Office: TASC 1 Room 7237)

Description/topics: General:  
This course is an introduction to the study of ice in the environment from a geophysical perspective, with a specific focus on the terrestrial cryosphere (glaciers and ice sheets). The objectives of this course are to (1) illustrate how first principles can be used to develop a conceptual and mathematical understanding of glacier form and flow, and (2) equip students to understand some of the critical and emerging scientific issues related to Earth's cryosphere.

Course Topics:  
1. Introduction to glaciology  
2. Glacier formation and mass balance  
3. Structure and material properties of ice  
4. Deformation of ice  
5. Glacier mechanics  
6. Glacier hydraulics  
7. Basal Processes  
8. Ice sheets, streams and shelves  
9. Surging and tidewater glaciers  
10. Subglacial lakes and outburst floods

Course Organization:  
Two hours of lecture and one 3-hour laboratory per week  
Laboratory periods will be used for problem sets, computer-based assignments and discussions of readings according to the weekly course matrix.
Grading: Assessment in this course has been designed to be distributed both in time (throughout the semester) and in methodology (to provide a broadly-based overall assessment that targets the various learning objectives).

Exams:
Midterm exams: 30%

Problem Sets/Laboratory Exercises:
4-5 throughout semester: 25-35%

Other:
Presentation/discussion of readings: 10-15%
Short writing assignments: 20-30%

Required texts: Required readings will be distributed during the course.


Materials/supplies: None

Prerequisite/corequisite: EASC 101 or GEOG 111, Math 152 (with grade C or higher), PHYS 121 (with grade C or higher). Contact the instructor if you are interested in the course but do not have the pre-requisites.

Notes: None