Syllabus for GLACIERS - GEOS 617 (3 credits)

Prerequisites: Graduate standing or permission of instructor

Meeting Time: Fall 2009, Tuesday 9.45-11.15 am and Thursday 9.45 – 11.15 am
Location: Elvey Building (Geophysical Institute), Rm 414 (4th floor)

Instructor: Regine Hock, Geophysical Institute, Elvey Building 401C
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ph: 474 - 7691. In urgent cases you can also reach me at my home telephone number: 451 4363.
Office hours: ad hoc / by appointment

Course content

The course deals with present-day glaciers and ice sheets including the mechanisms responsible for their existence, motion and variations, and the paleoclimate information they contain. The course focuses on the processes related to glacier mass balance, glacier meteorology, energy exchange at the glacier surface, glacier-climate interactions, and the response of glaciers to climate change, but also includes topics such as glacier hydrology, ice dynamics, and glacier thermodynamics.

Student learning outcomes

By the end of the course, students will

- have *gained* an understanding of the physics of glaciers and be familiar with current issues in glaciology,
- be able to *analyze* and *interpret* glaciological data,
- be able to *critically evaluate* glaciological scientific papers.

Instructional methods

- Lectures, student presentations, literature seminars
- Lectures will be interactive and will involve use of power point presentations, group discussions and smaller computational exercises. Each student will be required to prepare and present a seminar on a topic in glaciology. A written summary of the seminar is required. (Details on how to prepare the seminar are given on blackboard). In addition, material presented in the lectures will be consolidated by problem sets on selected topics.
- Class attendance is mandatory and participation encouraged.

Course readings/materials

There is no textbook for this class since there is no reasonably priced book covering all aspects of the course. A list with textbook with various foci will be presented in class and all books are available in the glacier's lab and can be borrowed. In particular the following books are recommended:

1.) Paterson, W.S.B., 1994. *Physics of Glaciers*. 3rd Edition, Elsevier Science Ltd. 480 pp.
(Note, a new edition is currently under preparation)

2.) Hooke, R.LeB., 2005. *Principles of Glacier Mechanics*. Cambridge University Press, Cambridge, 429 pp.

- Recommended glaciology journals:
  - Journal of Glaciology
  - Annals of Glaciology
  - Cryosphere
  - Journal of Geophysical Research (Earth Surface)
  - Geophysical Research Letters.
- An overview compendium covering some basics of the class will be distributed in class. Additional readings (scientific papers) will be made available during the course of the class.
- Note that all course material will be posted on blackboard, http://classes.uaf.edu). Access is restricted and you need to log in with your username and password.
- Students are encouraged to make extensive use of UAF's electronic journals. Familiarize yourself on the use of *Web of Science* and the *Goldmine* database of the Rasmuson library. There is a wealth of relevant literature especially for your seminar presentation.

Grading policy

Problem sets	35%
Student presentations	35%
Final exam	20%
Participation	10%

(Grades may include + or -).

Course calendar

See class schedule posted on the class web site. The class schedule may change during the course of the academic semester due to various reasons. The version on the class website will always be the latest version.

Disability Services

The Office of Disability Services implements the Americans with Disabilities Act (ADA) and insures that UAF students have equal access to the campus and course materials. This class will work with the Office of Disabilities Services (203 WHIT, 474-7043) to provide reasonable accommodation to students with disabilities. Make sure to let the instructor know if there are concerns of this type.