GEOSCI/GEOG 420: Glacial & Pleistocene Geology

Spring 2013 Syllabus
Tuesdays & Thursdays, 11am-12:15pm
Labs: Thursday, 1:20-3:15pm or 3:30-5:25pm

Instructors: Kelsey Winsor
email: winsor@wisc.edu
office: A270
office hours: T 1:00-2:00
W 4:00-5:00
Office hours in room A257

Basil Tikoff
email: basil@geology.wisc.edu
office: A462
office hours: T 2:00-3:00
R 10:00-11:00

Teaching Assistant: Richard Becker
email: rabecker2@wisc.edu
office: A270
office hours: R 9:00-11:00

Required Materials:
Textbook: Glaciers & Glaciation, Benn & Evans (2nd Edition)
Other readings will be provided.

Prerequisites:
GEOSCI 100, 106, or GEOG 120. It will help to have a general understanding of earth surface processes, so there will be sedimentology, geomorphology, and climatology books on reserve in the Geology Library (fourth floor).

Course Description:
During this course, we will examine how glaciers and ice sheets move, why they form the landscapes they do, and what has characterized the geology of the Pleistocene period. Throughout the term, we will work on thinking and writing scientifically.

Course Goals:
There are three main course goals. By the end of the course, you should:

1. Be capable of describing why glaciers and ice sheets move the way that they do, and what environmental factors influence that movement.

2. Be capable of identifying erosional and depositional landforms associated with ice sheets and glaciers, and of explaining how the landforms were formed.
3. Be able to explain the causes of glacial-interglacial cycles and how at least three proxies can be used to study Pleistocene climate changes.

Course Requirements and Rules:

Late and Make-up Policy:

This is an upper-level course, and we respect that you all have various things going on in your lives. At the same time, it is important that you turn in assignments on time (particularly when we will be doing peer review). Therefore, homeworks will be docked one letter grade each day that they are late for five days, at which point they will receive a zero. If you know ahead of time that you have a conflict with an exam date, we will allow you to take the exam early. If you miss an exam, you must do a make-up exam at the earliest possible time. You will not be allowed to make up in-class activities, as there will be many of them, but your lowest two in-class activity scores will be dropped. See your lab syllabus for description of lab late policies.

Academic Honesty

You are all good students, and we trust you. But, if we encounter instances of cheating, plagiarism, helping someone cheat, or other types of academic misconduct, we will choose from several options, including receiving a zero on the assignment, failing the course, or expulsion from the University.

Other stuff:

We will be having many discussions and doing some group work during this course. It is therefore incredibly important that everyone is respectful of everyone else in the class. Everyone should be given a chance to participate. We will do our best to make this a comfortable learning environment for you—please let us know if something is bothering you, so we can help adjust things.

Computers and cell phones in class—using them is up to you unless it becomes distracting for other students. But, do know that studies have shown that students learn less when they try to multitask with electronics.

Special Needs:

If you have special needs that could influence your course experience and would like accommodations, please let us know as soon as possible (preferably within the first week). We will keep these discussions confidential. If you would like to determine if you do need accommodations, contact the McBurney Center from their website: http://www.mcburney.wisc.edu/

Grading:
Final grades will be assigned based on the following:

35%	Homework
30%	Exams (3)
20%	Lab Activities
10%	In-class activities
5%	Field Trip

Except in cases of instructor error, assignment grades will not be changed after we hand back a given assignment. Your grades will not be curved in the traditional sense (we are not going to say that there has to be a certain number of A's, B's, etc.). But, if the final class average is below an 80%, we will scale everyone's grade up until the average is 80%. Final letter grades will be assigned based on the following scheme:

93-100%	= A	77-82%	= BC	0-64%	= F
87-92%	= AB	73-76%	= C		
83-86%	= B	65-72%	= D		

Assessments:

Homework Assignments:
You will have three sets of homework assignments, which will revolve around writing about scientific literature. Brief descriptions of the likely assignments are given below—more information will be given to you when each piece is assigned.

1. Read a scientific article and write an abstract for it. This abstract will be peer-reviewed in class, and you will have a chance to revise it.
2. Read a scientific article and summarize the major points in a one to two-page paper. This paper will be peer-reviewed outside of class by two classmates, and then you will revise it.
3. Read a scientific article, then summarize and analyze it in a three to four-page paper. This paper will be peer-reviewed outside of class by a classmate, and then you will revise it.

All of the reviews you complete for your classmates' work will be graded by an instructor. This means that not only will you (hopefully) improve your scientific writing, you will also improve your ability to peer-review.

Exams:

Exams are used to determine whether you've understood the important points we've covered, and to give you feedback on your understanding. Exams for this course will be a combination of multiple choice, short answer, and long answer. The final will be cumulative. You won't be allowed to use your textbook or notes on the exams, but you may use a calculator if you want.

Lab Activities:

Lab is the place where you get to put into practice the material we go through in class. It's therefore important for your understanding of the material to do all the labs. We will not have lab if there is a field trip that week—details can be seen in the syllabus schedule. Labs will be due one week after they are assigned. See the lab syllabus for further details.

In-class Assignments:

In-class assignments will be how we assess you (and how you'll assess yourself, and how we'll assess our teaching) between exams. They'll also be a way to get you thinking actively without making you do work outside of class. Assignments will normally take just a few minutes, and we'll have them frequently—it's therefore important that you come to class consistently.

Field Trips:

We will have a mandatory field trip for this class, looking at glacial features around eastern Wisconsin. The eastern Wisconsin field trip will be an overnight camping trip, and will be April 13-14. If you have a conflict with these dates, please let us know right away. Field trips are fun, though the weather can be variable, and they will give you a chance to see in real life what we've talked about in class.

Schedule:

Below is the tentative schedule for this course. We will attempt to keep the due dates consistent with this schedule, but it may be necessary to alter them. It is also possible that the topics covered will differ, but we will maintain an updated schedule on Learn@UW.

Week	Date	Main Topic	Detail	Labs	Assessments due
1	22-Jan	Intro to class	Syllabus & course overview, Why study Plestocene & Glacial Geo?		
	24-Jan	Glacial Movement	Energy Balance & Ice Temperatures	Surface Energy Balance	
2	29-Jan		Mass balance, Accumulation, & Ablation		Online survey
	31-Jan		Stress & Strain	Glacier Mass Balance	
3	5-Feb		Stress, Strain & Rheology		Abstract
	7-Feb		Stress, Strain & Rheology	Glacier Flow	
4	12-Feb		Deformation & Basal Motion		Abstract Reviews (in class)
	14-Feb		Glacier Hydrology	Green Bay Lobe Paleoglaciology	Come meet one on one
5	19-Feb		Glacier Dynamics		Final Abstract
	21-Feb	Glacial Landforms	Intro to Erosion	Intro to Topo Maps and Air Photos	
6	26-Feb	Exam 1			
	28-Feb		Erosion: Small & Large Features	Glacial Landforms	
7	5-Mar		Landscapes Made by Erosion		Draft of Article Summary
	7-Mar		Debris in Ice	Glacier Erosion and Deposition	
8	12-Mar		Intro to Depostion & Sediment Classification, Till		Review Article Summary
	14-Mar		Sedimentary Landforms: Subglacial	Gahanna Tills Sediment Interpretation	Mid-semester survey
9	19-Mar		Sedimentary Landforms: Moraines		
	21-Mar		Sedimentary Landforms: Supra & Proglacial	Moraines and Glacial Lake Oshkosh	
	spring break				
10	2-Apr		Marine & Lacustrine Deposits		Revise Article Summary

	4-Apr		Wisconsin Glacial Landscapes	Field Trip Prep	
11	9-Apr	Pleistocene Geology & Paleoclimate	How to Look at Past Glacial Behavior		
	11-Apr	Exam 2		No Lab	
	4/13-4/14		Eastern Wisconsin Field Trip		
12	16-Apr		Dating Geomorphological Features		
	18-Apr		Special Guest Lecture	No Lab	
13	23-Apr		Ice Core & Ocean Sediment Records		Draft of Article Analysis
	25-Apr		Ice Sheets & Sea Level	14C and 10Be Dating	
14	30-Apr		Pleistocene Climate		Reviews of Article Analysis
	2-May		Regional Studies of Glaciers/Landforms/Climate interaction: Greenland	Glacier Runoff	
15	7-May		Regional Studies of Glaciers/Landforms/Climate interaction: Himalayas		
	9-May		Regional Studies of Glaciers/Landforms/Climate interaction: Southwestern US	Tropical Glaciers Overview	Final Article Analysis
	17-May	Final Exam			