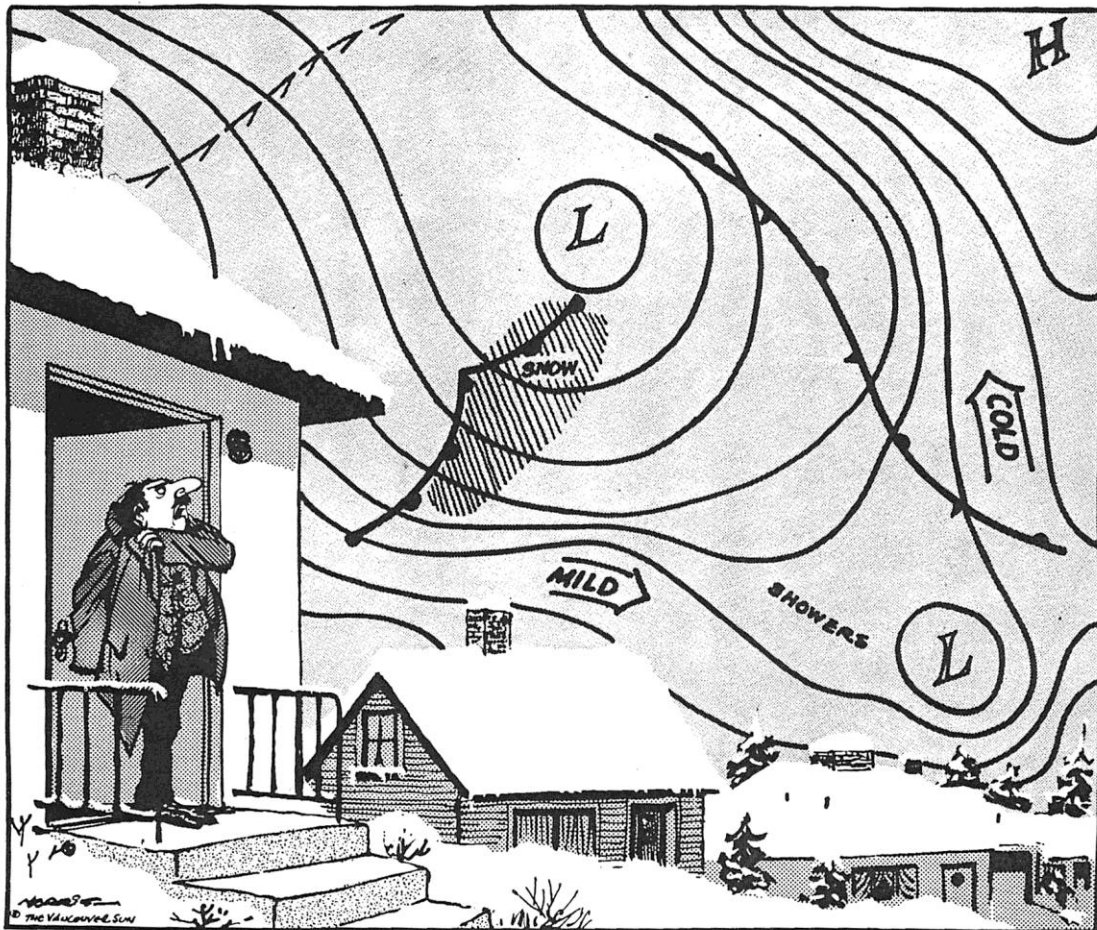


University of Waterloo
Department of Geography and Environmental Management

GEOG 309 – “PHYSICAL CLIMATOLOGY:
THE PHYSICAL BASIS OF ATMOSPHERIC PROCESSES”
Dr. Ellsworth LeDrew

Fall 2016
MW: 11:30 am- 12:50
Lecture Room: AL room 208

Office: ES1 121 ☎ 888-4567 x32783
email: ells@uwaterloo.ca
Office Hours: Tuesday 2 to 4 PM



Cartoon by Len Norris, courtesy of The Vancouver Sun

“FRANKLY, I DON'T LIKE THE LOOK OF THE WEATHER . . .”

FROM: Hare, F.K., M.K. Thomas, 1979, Climate Canada, Wiley Publishers, Canada, 230 pp.

COURSE DESCRIPTION:

In this course, a conceptual model of the climate system that includes the human dimensions is presented. The climate system is defined as the atmosphere and its interaction with the ocean, ice and land surfaces. The concepts of feedbacks and thresholds as they relate to this system are introduced and the significance of the points of human leverage is discussed. Subsequently, individual components of the system are examined in detail. The objective is to have a clear understanding of how the various components of the climate system interact and how humans are in a position to become a major force in the process flows within this system. Current climate topics such as global warming, El Niño, La Niña, and their effect on the Canadian climate are discussed throughout the course.

COURSE OBJECTIVES:

Upon completion of this course, each student will be able to discuss the following:

- 1/ How do the fundamental geographical processes explain my daily experience of weather and climate?
- 2/ What is the impact of my daily activities on regional and global climate change and variability?
- 3/ What is my effective contribution to issues presented in the public and professional debate on climate change and variability?
- 4/ How can I explain my understanding of the issues of climate change and variability ideas to others with confidence and persuasion?

COURSE RESOURCES:

1/ Aguado, E., J. E. Burt, 2010 (Fifth edition, later editions may be available), Understanding Weather and Climate, Pearson, 596 pages.

There is a web learning site available with purchase.

This is an expensive book but the best for this class. There is a Kindle version and time sensitive versions available as e-books and used versions available for lower prices. Any edition is good but the page numbers in the outline will not be correct for other editions than the fifth.

Note that there will be interactive quizzes in class using the 'I-clicker' to be purchased from the bookstore or available from previous classes. Individual 'I-clickers' are registered to each student.

COURSE STRUCTURE AND EVALUATION:

Course Learning Outcomes/goals	Teaching and Learning Methods	Assessment Methods	% grade
Understand physical processes of climate and weather	Lectures and Text readings	Iclicker tests	25
		Participation Marks	5
		Two Mid-terms	30
Analysis of Daily Weather events during the course	Daily Weather Briefing	Analysis of Sequence of Weather Maps in Class Workshop as groups of four and explain the sequence and processes of weather in Southern Ontario	10
Assess role of weather on personal daily activity	GEO-WIKI and Personal Blog	Photography app completion	15
Assess public debate on Climate Change and Variability	Newsfeeds	Personal Blog with group discussion on Learn and two-slide presentation	15

In class quizzes:

There will be quizzes during class using I-clicker technology. (For some UW documentation on the I-clicker, please see << <http://www.math.uwaterloo.ca/~pkates/LT3/clickers/clicker-student-faq.html> >> which has some FAQ for students).

The quizzes will be a series of five tests graded out of a total of 25 marks using the I-clicker system. These will be multiple-choice of ten questions, each worth ½ mark. **The dates are in the course outline.** Each quiz with more than 7 questions answered will get 1 participation mark in addition to the grade out of 5. Therefore there are 30 possible marks for the I-clicker quizzes.

UW-DTL: is the web site for all official marks, notices and course materials. All information will be on this site (<https://learn.uwaterloo.ca>). There is a pop-up window at the “?” for student help and log-in procedures. You can access help also at < <https://uwaterloo.ca/learn-help/>>.

Email Correspondence: Any email correspondence between students and myself will only be through University of Waterloo email accounts and UW-DTL. There will be no exceptions. We will not send email notices etc through a hotmail account, for example.

GEOGRAPHY 309 COURSE CONTENT

Week #	Date	Topic	Readings Fifth Edition	Iclicker Test	Lighting Presentations
1	16-09-12	HUMAN DIMENSIONS OF CLIMATE CHANGE AND VARIABILITY	pp 519-527		
	16-09-14	Radiant Energy Flow in Climate Processes-1	32-44, 59-69, 72-75	Trial Iclicker Test	
2	16-09-19	Radiant Energy Flow in Climate Processes-2			
	16-09-21	<i>Video: THIN ICE: The Inside Story of Climate Science</i>			
3	16-09-26	Convective Energy Flow in Climate Processes-1	35-36, 69-72, 77-97	Iclicker Test One	
	16-09-28	Convective Energy Flow in Climate Processes-2			
4	16-10-03	Circulation Processes-1	101-129		
	16-10-05	In Class Mid-Term TEST ONE			
5	16-10-10	Thanksgiving			
	16-10-12	Circulation Processes-2			
6	16-10-17	Circulation Processes-3	227-271	Iclicker Test Two	
	16-10-19	Circulation Processes-4			
7	16-10-24	Circulation Processes-5			
	16-10-26	<i>Video: "Arctic Circle: On Thin Ice"</i>			
8	16-10-31	Weather Processes-1	273-295		
	16-11-02	Weather Processes-2	299-325	Iclicker Test Three	
9	16-11-07	Weather Processes-3			
	16-11-09	Weather Processes-4			
	16-11-14	Weather Processes-5			

	16-11-16	El Niño and teleconnections-		Iclicker Test Four
11	16-11-21	<i>Video: "The Great Warming, the Human Fingerprint"</i>		
	16-11-23	<i>In Class Mid-Term TEST TWO</i>		
12	16-11-28	Regional Climate and Weather of Southern Ontario		First Third of class
	16-11-30	Climate Models and Issues of Climate Change for Canada 1	497-533	Second Third of Class
13	16-12-05	Climate Models and Issues of Climate Change for Canada 2		Iclicker Test Five Last Third of Class

PLEASE NOTE

Missing Assignment and Examinations: If you miss an exam due to a valid medical reason, personal or family emergency, etc., contact me immediately, and promptly obtain a University of Waterloo medical or counselor's note explaining the reason for your absence, degree of incapacitation, dates covered by the note, etc. Please provide the original of the note to me in person. I need the ORIGINAL copy. Do **NOT** have another person deliver it and do not slip it under my office door where it may be dislodged by cleaners and never found again!

Typically, the missed examination or test is made up by an essay with a topic that I determine which covers material covered in class lectures and the textbook readings. It is to be completed within 5 days. The note does **NOT** guarantee such an alternative arrangement! The arrangement is only accepted based upon my judgment of the situation.

Also note, only ONE missed examination or test, even with a valid medical or counselor's note, will be accommodated with such an alternative arrangement. The second or successive examination or test missed will result in a zero for the examination.

No alternative arrangements are made for missed I-clicker tests or other assignments.

Examinations: It is the student's responsibility to be available to write exams in the scheduled times. The two midterm exams will be held in class during the lecture period. The final exam will be held during the university's scheduled examination period. The exams are mandatory, and no alternative exam dates are possible. If you miss an exam due to a valid medical reason, personal or family emergency, etc., contact me immediately, and promptly obtain a valid medical or counselor's note explaining the reason for your absence, degree of incapacitation, dates covered by the note, etc. The note does **NOT** guarantee an alternative arrangement! Please provide the original of the note to me in person. Do **NOT** have another person deliver it and do not slip it under my office door where it may be dislodged by cleaners and never found again!

The Legal Stuff

◆ Unclaimed assignments:

Unclaimed assignments and tests will be retained until one month after term grades become official in quest. After that time, they will be destroyed in compliance with UW's confidential shredding procedures.

◆ **Academic Integrity:** In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. www.uwaterloo.ca/academicintegrity/

◆ Students who are unsure what constitutes an academic offence are requested to visit the on-line tutorial at <http://www.lib.uwaterloo.ca/ait/>

◆ **Research Ethics:** Please also note that the 'University of Waterloo requires all research conducted by its students, staff, and faculty which involves humans as participants to undergo prior ethics review and clearance through the Director, Office of Human Research and Animal Care (Office). The ethics review and clearance processes are intended to ensure that projects comply with the Office's Guidelines for Research with Human Participants (Guidelines) as well as those of provincial and federal agencies, and that the safety, rights and welfare of participants are adequately protected. The Guidelines inform researchers about ethical issues and procedures which are of concern when conducting research with humans (e.g. confidentiality, risks and benefits, informed consent process, etc.). If the development of your research proposal consists of research that involves humans as participants, the please contact the course instructor for guidance and see <http://iris.uwaterloo.ca/ethics/>

◆ **Note for students with disabilities:** The AccessAbility Office located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the AccessAbility Office at the beginning of each academic term.

◆ **Religious Observances:** Student needs to inform the instructor at the beginning of term if special accommodation needs to be made for religious observances that are not otherwise accounted for in the scheduling of classes and assignments.

◆ **Grievance:** A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70 - Student Petitions and Grievances, Section 4, www.adm.uwaterloo.ca/infosec/Policies/policy70.htm. When in doubt please contact your Undergraduate Advisor for details.

◆ **Discipline (as noted above under 2a):** A student is expected to know what constitutes

academic integrity, to avoid committing academic offence, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (e.g., plagiarism, cheating) or about “rules” for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. For information on categories of offences and types of penalties, students should refer to Policy 71, Student Discipline, www.adm.uwaterloo.ca/infosec/Policies/policy71.htm. For typical penalties, check Guidelines for Assessment of Penalties, www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm

◆ **Appeals:** A decision made or penalty imposed under Policy 70 - Student Petitions and Grievances (other than a petition) or Policy 71 – (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) www.adm.uwaterloo.ca/infosec/Policies/policy72.htm

◆ **Academic Integrity:** In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. [Check www.uwaterloo.ca/academicintegrity/ for more information.]