

Global Climate

Dr. Aileen O'Donoghue (Physics)
220 Bewkes Hall, 229-5470

TEXTS: *Understanding Weather & Climate*, Aguado & Burt, 7th Edition
Deep Future, Curt Steger

WEB SITE: <http://myslu.stlawu.edu/~aodo/SLU/climate/index.htm>

INFORMATION AND LECTURE FILES: T:\Global Climate

Science is simply a long and careful look beneath and beyond the world's skin. In the same field where I see only a muddle of anonymous green, Henry David Thoreau, scientist of Walden Pond, saw infinite variety: cotton grass, foxtail, life-everlasting, goldenrod, Saint Johnswort, mullein, meadowsweet. An astronomer sees a sky far richer than mine, filled with quasars and pulsars, galaxies and nebulae. In all that bickering at the bird feeder, an ornithologist sees pair bonds and pecking order. In that annoying rock dug out of the strawberry patch, a geologist sees grey granite left in the 10,000-year-old path of glaciers. This new depth of seeing has taken us from the beetles in our own back yards to the particles inside the atom and the gaseous glow at the end of the universe.

— Rebecca Rupp

COURSE PHILOSOPHY: AS A DISTRIBUTION REQUIREMENT

Global Climate is intended for students not majoring in science. It fulfills a distribution requirement, which means that besides having no pre-requisites, it must fulfill the rationale and definitions agreed upon by the St. Lawrence University faculty in the fall of 2012¹:

4. NATURAL SCIENCE WITH LAB (NSM-L): COURSES HAVE PRIMARY LEARNING GOALS IN WHICH STUDENTS DEVELOP:

A. AN UNDERSTANDING OF THE PHYSICAL, CHEMICAL, BIOLOGICAL, AND/OR BEHAVIORAL PHENOMENA OF THE NATURAL WORLD AND, INsofar AS POSSIBLE, AN ABILITY TO RELATE THEM TO EVERYDAY EXPERIENCE; AND

B. A THEORETICAL AND QUANTITATIVE UNDERSTANDING OF THE PROCESSES UNDERLYING THE PHYSICAL, CHEMICAL, BIOLOGICAL, AND/OR BEHAVIORAL PHENOMENA OF THE NATURAL WORLD; AND

C. AN UNDERSTANDING OF HOW SCIENTIFIC KNOWLEDGE OF THE NATURAL WORLD IS OBTAINED AND REVISED THROUGH HYPOTHESIS TESTING USING EXPERIMENTAL AND/OR OBSERVATIONAL METHODOLOGIES.

IN ADDITION, NATURAL SCIENCE LAB COURSES ARE REQUIRED TO INCLUDE A REGULARLY SCHEDULED LABORATORY COMPONENT THAT MEETS WEEKLY FOR AT LEAST 90 MINUTES, IN WHICH STUDENTS HAVE THE OPPORTUNITY TO EXAMINE PHENOMENA OF THE NATURAL WORLD USING EXPERIMENTAL AND/OR OBSERVATIONAL METHODS.

¹ Curriculum Revisions, Part II passed on 5/18/99, copies available in the Registrar's office.

COURSE PHILOSOPHY: AS AN INTERDISCIPLINARY SCIENCE COURSE

Each course is an opportunity for me to stir every student's sense of wonder and to broaden the way they see the universe. This universe is an amazingly elegant and wondrous place. The Earth is a strikingly unique place where liquid water falls from the sky, life strives to fill every crevice and landscape, and some creatures look up to the sky in wonder.

In *Global Climate*, we will strive to provide an expanded historical and geological context within which to understand the working of Earth's climate and the scientific work of learning to understand its processes. I will also nurture a familiarity and appreciation that I hope will fuel a life-long interest in weather, climate, and the science and health of the atmosphere.

EXPECTATIONS

As your professor, I endeavor to make every class engaging and informative, utilizing all the resources available. Unless I am seriously ill or have unavoidable travel, I will be at every class prepared to lead you on an intellectual journey from the depths of the Earth to the top of the atmosphere and beyond. On every task and assignment, I will do all humanly possible to help you succeed and understand.

Since you've expressed interest in global climate by signing up for the class, I expect you to be open to exploring the Earth and its atmosphere and willing to participate fully in activities designed to engage you in that exploration. **This requires you to come to every class during the semester and remain in class for the full time unless you are ill. We'll go no longer than an hour without a break, so you should not have to leave class other than during breaks. It's rude to leave while someone is speaking.**

Participating fully in class requires you to be an active learner, that is, I expect you to take notes, by hand during lectures. The Power Point presentations will be available before class. You may print them out and take notes on them or on separate paper. You don't need to write down every piece of information (you can access the Power Points after class to get details you miss), but you need to write down the big ideas and information from what I say as well as what is on the slides. Passively listening to the lectures will not lead to success in this course.

Modern science, particularly study of the climate that utilizes large multi-national instruments, is a collaborative human activity. To model this for those of you in what may be your last science class, almost all of our activities are collaborative. The lab exercises you will do and even the exams have collaborative sections. **Though all the words you write on them must be your own, you will discuss the ideas with your peers. In order for everyone in the class to be fully invested, it is not an option to take the course pass-fail.**

COURSE REQUIREMENTS:

- | | |
|---------------|---|
| 1) Attendance | - Attendance (+ labs) is required and will count for 20%,
- Arrive on time and stay for the entire time, a break will be given |
| 2) Lab Work | - Exercises must be completed and handed in during the lab period
- Average will be combined with the attendance score |
| 3) Exams | - Two will be given as scheduled in the calendar (40% MT, 25% F) |
| 4) Projects | - United States Winter 2017 Project (40% MT, 35% F)
- Climate Symposium Presentations during Final period) (20% F) |

FINAL GRADE will be a simple average of all of the above grades, scaled to

4.0	3.75	3.5	3.25	3.0	2.75	2.5	2.25	2.0	1.75	1.5	1.25	1.0	0.0
>94%	91- 94	88-91	85-88	82-85	79-82	76-79	73-76	70-73	67-70	64-67	61-64	58-61	<58

with the instructor's subjective freedom for the treatment of borderline cases!