



Current Topics in World Climate and Atmosphere

ATM-237 and PHY-237 Section 01

Tuesdays and Thursdays, 11:30 a.m. – 12:50 p.m., Harriman 137

Spring 2018

(Syllabus version 1.0)

Instructor contact information and Office Hours:

Dr. David Black, School of Marine and Atmospheric Sciences, Discovery Hall, Room 157.

Phone: 631-632-8676; email: david.black@stonybrook.edu.

Office hours: By appointment (my schedule is very flexible to meet your needs).

Text: *The Thinking Person's Guide to Climate Change*, Robert Henson. There are no specific readings for any given class as the textbook does not directly follow the lecture outline. However, please look at the book's index for the appropriate lecture topic and read the relevant material in advance of the class.

Course goals: We will explore current concerns about modern and future global climate change with emphasis on changes related greenhouse effect-warming in a format accessible to non-science majors. Topics include an introduction to the climate system, past climate variability and climate forcing mechanisms, climate change effects on a variety of ecosystems, extreme weather, and human dimensions of climate change. This course satisfies both the Category H component of the Diversified Education Curriculum (DEC) and Stony Brook Revised Curriculum category STAS. Not for major credit.

There are three broad learning objectives for this course:

- 1) Comprehend the current concerns about the greenhouse effect and its consequences on global ecosystems, water resources, human health, and quality of life.
- 2) Compare other human-atmosphere interactions, including ozone loss and acid rain.
- 3) Recognize domestic and international social and political efforts being taken to limit climate change and atmospheric pollution.

Instructor expectations of you as a student: This is a 200-level course, and while the material will be taught such that it is accessible to non-majors, the material will be taught at a higher and more in-depth level than for a 100-level course. If you are looking for an "easy A," this is not the course for you! You should spend approximately three hours every week outside of class reviewing the material or you risk falling behind. Obviously the amount of time each student needs to review course material will vary from person to person, but generally speaking, you should spend about one hour going over course material outside of class for every hour spent in class. If you do not understand the material, please make an appointment to see your instructor - this can not be emphasized this enough! Attendance is not officially part of your grade, but missing class will unquestionably have a negative impact on your grade. Finally, please do not be late for class. The doors to the classroom make a lot of noise, and a constant stream of late students entering the classroom is extremely disruptive.

Grading: Your grade will be based on a series of quizzes, three exams taken during the semester, and a cumulative final exam. Quizzes will occur almost every week and will consist of

some combination of multiple choice and short-answer questions. Missed quizzes may be excused with documentation (e.g., a doctor's note) at the instructor's discretion. Exams will be a combination of multiple choice questions and short-answer questions. Please see the course schedule later in this syllabus for all exam dates. No bathroom breaks will be allowed during exams, including the final exam – please make sure to use the restroom before the exam starts. Students arriving late to an exam will not be allowed to take the exam after the first person has left the room. Similarly, students arriving late to quizzes will not be allowed to take the quiz. You will be allowed to drop the lowest class-time exam or final exam score. No makeup exams will be given because of this drop policy.

If you have a SBU function that conflicts with an exam date (e.g., a sports or performing arts obligation), please contact Dr. Black *several weeks in advance* so that alternative arrangements for the exam can be made. As per the university's Provost Office's official policy, if you will miss a class during the semester for religious reasons, you must notify me of your upcoming absence no later than last day to drop/add a class (February 2, 2018).

To provide incentive for you to take every class-time exam and to study each section of the course equally, students who take all three class-time exams will be able to opt out of taking the final (otherwise it is mandatory). You can still take the final if you wish – it will not hurt your grade. Either way, the lowest of the four exam grades will be dropped.

Your grade will be determined as follows:

Quizzes	25%
Class-time exams (best two of three at 25% each)	50%
<u>Cumulative final exam</u>	<u>25%</u>
TOTAL	100%

Please keep in mind that this is a weighted average. *Ignore the "Total Grade" column in Blackboard!* It does not represent a weighted average and thus does not accurately reflect your grade for the course. You can use the following formula and grade scale to calculate your grade at any point during the semester:

$$\text{Course grade} = (\text{Quiz average} \times 0.25) + (\text{Class-time exam average} \times 0.50) + (\text{Final exam} \times 0.25)$$

- 93 to 100 = A
- 90 to 92 = A-
- 87 to 89 = B+
- 83 to 86 = B
- 80 to 82 = B-
- 77 to 79 = C+
- 73 to 76 = C
- 70 to 72 = C-
- 67 to 69 = D+
- 60 to 66 = D
- < 60 = F

Extra credit: No extra credit will be available for this course. Please take all graded materials seriously.

Course policy on academic integrity: Cheating in any way is grounds for failure of the entire course. Cheating includes, but is not limited to: copying answers from another individual, using cheat sheets, crib notes, plagiarism, wireless communications (*e.g.*, texting, email), or any other outside means to send/receive information during an in-class graded assessment, *etc.* Cheating also includes deliberately providing answers to other students. No second chances will be given if you are caught cheating. Ask your instructor if you are unsure about what might constitute cheating.

Access to our class's on-line Blackboard site: You can access class information (including lecture slides) on-line at: <http://blackboard.stonybrook.edu>. If you have never used Stony Brook's Blackboard system, your initial password is your SOLAR ID# and your username is the same as your Stony Brook username, which is generally your first initial and the first 7 letters of your last name.

University notice regarding personal conduct and academic integrity: The University at Stony Brook expects students to maintain standards of personal integrity that are in harmony with the educational goals of the institution; to observe national, state, and local laws and University regulations; and to respect the rights, privileges, and property of other people. Faculty are required to report disruptive behavior that interrupts faculty's ability to teach, the safety of the learning environment, and/or students' ability to learn to Judicial Affairs. Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Any suspected instance of academic dishonesty will be reported to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at <http://www.stonybrook.edu/uaa/academicjudiciary/>

Americans with Disabilities Act: If you have any physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, ECC (education Communications Center) Building, room 128, phone (631) 632-6748. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential. Students requiring emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information, go to the following web site: <http://www.ehs.sunysb.edu/fire/disabilities/asp>

Other policies: Course policy issues not explicitly covered by this syllabus are at the discretion of the instructor.

Tentative Course Schedule:

Date	Lecture topic
Jan. 23	Introduction to the climate system
Jan. 25	Paleoclimatology

Jan. 30	Chasing Ice, Part 1
Feb. 1	Chasing Ice, Part 2
Feb. 6	Climate change in the context of the last 100 million years – tectonic controls of CO ₂
Feb. 8	Climate change in the context of the last 3 million years – orbital controls of CO ₂ , CH ₄ , and insolation
Feb. 13	Climate change in the context of the last 1000 years – solar, ocean, and volcanic controls
Feb. 15	Climate change over the last 100-150 years
Feb. 20	Climate change lies, myths, and misconceptions
Feb. 22	Methods for predicting and projecting future climate change
Feb. 27	EXAM 1
Mar. 1	Climate impacts on drinking and agricultural water supplies
Mar. 6	Effects of climate change on freshwater ecosystems from the tropics to the poles
Mar. 8	Climate change effects on ocean circulation and climate feedbacks
Mar. 13	SPRING BREAK
Mar. 15	SPRING BREAK
Mar. 20	Climate change effects on world ocean ecosystems and ocean acidification
Mar. 22	The rapidly changing Arctic and Antarctic
Mar. 27	Agriculture and climate
Mar. 29	Climate change and extreme weather
Apr. 3	Climate change and human health
Apr. 5	EXAM 2
Apr. 10	Fossil fuels – oil, natural gas, and coal; origin and advantages/disadvantages
Apr. 12	Alternative energy resources – nuclear, solar, hydroelectric, wind, geothermal
Apr. 17	It is not all about the greenhouse effect – cue the ozone hole and acid rain!
Apr. 19	State-level climate policy and politics
Apr. 24	National-level climate policy and politics
Apr. 26	International-level climate policy and politics
May 1	Geoengineering
May 3	EXAM 3
May 15	FINAL EXAM, 11:15 a.m. – 1:45 p.m., Harriman 137