

SCI 100: Climate Change

West Chester University
Spring 2024

Syllabus

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INSTRUCTOR

Dr. Morrison (*he/him/his*)
SECC 359
✉ imorrison@wcupa.edu
☎ +1 (610) 436-3297

OFFICE HOURS

- Mon.. 12:30–1:50 pm ET
- Wed. 12:30–1:50 pm ET
- Thurs. 9:00–11:30 am ET

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Course information

COURSE SECTION DETAILS

Section	Days	Time	Location
01	Mon., Wed., Fri.	11:00–11:50 am ET	Brandywine Hall 031

COURSE DESCRIPTION

This course provides an introduction to the science of climate change. Core topics include albedo, the greenhouse effect, the carbon cycle, and feedback mechanisms between these phenomena. We will study past climates, climate models, and the impacts of modern climate change. Near the end of the semester we will discuss efforts to mitigate climate change. We conclude by briefly discussing the most widely adopted climate change policies. No previous experience with these subjects is assumed.

SCI 100 is approved as a WCU General Education Science Distributive course.

COURSE SCHEDULE

The **Course Schedule** is on our course D2L homepage. The schedule lists the dates of exams and assignment deadlines. It also provides hyperlinks to lectures slides, asynchronous lessons, and assignments, as well as list recommended reading. The schedule is updated regularly.

METHODS OF DELIVERY

The modality of this course is face-to-face (i.e., in-person). The course has three 50-minute in-person meetings scheduled each week. However, note the following exceptions:

- **Asynchronous lessons:** This course will have approximately 6 asynchronous, D2L-based lessons in lieu of an in-person class meeting. The dates of asynchronous lessons are listed in **bold red font** on the **Course Schedule**. On these dates class will not meet in person. The dates of asynchronous lessons are subject to change. You should plan to be able to attend every class meeting in person.

To complete an asynchronous lesson, click on the hyperlink provided on the **Course Schedule**. (The lesson may not be available until class time.) Complete all activities on the lesson web page prior to the next scheduled class meeting. Note that, like in-person lessons, asynchronous lessons have an associated homework due the next class day.

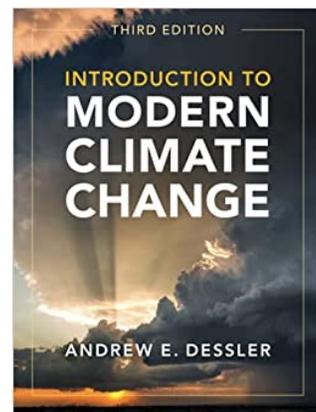
- **Project work days:** This course includes individual projects. For each project I will give you one class period to work on your projects. The dates of project work days are listed in **bold blue font** on the **Course Schedule**. On these dates class will not meet in person.

TIME COMMITMENT

This is a three credit-hour course. In addition to three 50-minute classes, this course requires (on average) 1-3 hours of reading, assignments, and studying outside of class time each week.

COURSE MATERIALS

- **Textbook:** The course textbook is *Introduction to Modern Climate Change*, Third Edition, by Andrew Dessler (ISBN: 9781108793872). The textbook is for sale at the [WCU campus store](#); you will find less expensive options elsewhere. I recommend the [e-textbook](#), which is cheap and saves paper.
- **Scientific calculator:** For exams and in-class work you will need a calculator that can compute powers and operate in scientific notation. When completing homework you are welcome to use a web-based app, such as the [Desmos scientific calculator](#).



STUDENT LEARNING OUTCOMES

SCI 100 is approved as a WCU General Education Science Distributive course. The student learning outcomes (SLOs) for this course are aligned with the following General Education Goals:

1. Communicate effectively:
 - a) Express oneself effectively in common college-level written forms.
2. Think critically and analytically:
 - b) Construct and/or analyze arguments in terms of their premises, assumptions, contexts, conclusions, and anticipated counter-arguments.
 - c) Reach sound conclusions based on a logical analysis of evidence.
3. Employ quantitative concepts and mathematical methods:
 - a) Employ quantitative methods to examine a problem in the natural or physical world.
 - b) Apply the basic methods and thought processes of the scientific method for natural/physical science in a particular discipline.

The course SLOs are:

- A. **Concepts:** Describe in plain language the key concepts underlying the physical basis for climate change.
- B. **Basic science:** Demonstrate quantitative understanding of basic scientific quantities, including power, light, energy balance, albedo, isotopes, and diffusion.
- C. **Modeling:** Utilize quantitative scientific models of earth systems, including blackbody radiation, the layer model, the carbon cycle, feedback mechanisms, and climate sensitivity.
- D. **Climate history:** Identify key properties of Earth’s climate history, as well as the paleo-proxies used to determine these properties.
- E. **Human activity:** Identify the most important human effects on the climate, including sources greenhouse gas emissions, aerosols, and land use changes.
- F. **Predictions for the future climate:** Synthesize possible socioeconomic pathways IPCC climate forecasts to make predictions for how our climate will evolve in the 21st century.
- G. **The challenge:** Demonstrate understanding of the economic and sociological challenges to addressing climate change.

Activities that work towards these outcomes include:

- Quantitative in-class examples,
- Group discussion,
- Think-pair-share (TPS) activities,
- Homework (HW), which contains quantitative and qualitative activities, as well as short written responses.

Outcomes are primarily assessed via exams and projects. This is summarized in the following table:

SLO	Gen Ed Goal	Formative activities	Assessment
A	1a, 3b	discussion, TPS, HW	exams, projects
B	3a, 3b	examples, TPS, HW	exams
C	2b, 2c, 3a, 3b	examples, TPS, HW	exams
D	2c, 3b	discussion, HW	exams
E	2c, 1a, 3a, 3b	discussion, examples, HW	exams, projects
F	2b, 2c, 3a, 3b	discussion, examples, TPS, HW	exams
G	1a, 2b, 2c	discussion, HW	exams, projects

ASSESSMENT SCHEME

This course follows the official WCU scale for grades:

Grade	Quality Points	Percentage	Interpretation
A	4.00	93–100	Excellent
A–	3.67	90–92	
B+	3.33	87–89	Superior
B	3.00	83–86	
B–	2.67	80–82	
C+	2.33	77–79	Average
C	2.00	73–76	
C–	1.67	70–72	
D+	1.33	67–69	Below Average
D	1.00	63–66	
D–	0.67	60–62	
F	0.00	<60	Failure

Refer to the [WCU Undergraduate Catalog](#) for description of NG (No Grade), W, Z, and other grades. Elements of the course will contribute to the course grade as follows:

Percent	Category
10%	Participation
30%	Homework
40%	Exams (16 + 16% + 8%)
20%	Individual projects (2 × 10%)

10% **Participation:** You are expected to be an active participant in class. Attending class, paying attention, and participating in learning activities is sufficient to earn full credit for participation. In contrast, missing class or being disengaged while in class will result in a low participation grade. As one measure of participation, I will record attendance. I do not expect perfect attendance.

30% **Homework:** There is a homework assignment associated with each lesson. The homework for each lesson is due at **11:59 pm ET on the next class day**. So, most weeks there is a homework due on Monday, Wednesday, and Friday evenings. Homework assignments are completed as “quizzes” on D2L. The **Course Schedule** lists assignment deadlines and includes a hyperlink to each assignment.

When calculating your course grade, I will “drop” your 4 lowest homework scores. This policy serves to accommodate various situations which might cause you to miss an assignment deadline, but which are not considered excused absences under the [WCU Excused Absences Policy](#).

Most homework assignments are composed of questions that are graded by computer. For these assignments, you are allowed **unlimited attempts** to submit answers for full

credit. After the deadline for the assignment has passed, the assignment will close and you will receive a score equal to your highest attempt.

Some homework assignments require written responses. These assignments are graded by the instructor. For these assignments, you may revise your answer as many times as you like prior to the deadline, and only your final submission will be graded. Written work is assessed for completeness as well as accuracy.

Answers to homework questions and instructor feedback on written work become available on D2L shortly after the assignment deadline. To view answers and feedback, click on the “Quizzes” tab, then click on the “View feedback” hyperlink to the right of the assignment.

40% **Exams:** There will be three in-class exams offered during the semester. Your two highest exam scores each contribute 16% to your course grade; your lowest exam score contributes 8% to your course grade. Exam dates are listed on the **Course Schedule**.

Exams are 50-minute assessments offered in class. Exams are “closed book”: the only aids allowed are the course Cheat Sheet and a stand-alone calculator with no communication abilities. You may not use any other materials or access the internet.

Exams will include multiple choice questions. There is no partial credit available for these questions; I will not examine your scratch work. Exams may also contain short written response questions for which partial credit is available.

Exam scores may be scaled (“curved”) to conform to a standard distribution of grades. Failure to take an exam results in a 0 score.

20% **Individual projects:** There will be two individual projects, each contributing 10% to your course grade. For each project, the **Course Schedule** provides a hyperlink to the project webpage which provides detailed instructions for completing the project. All project work is due to be submitted at **11:59 pm ET on the date listed on the Course Schedule**.

Most of this course focuses on the global phenomenon of climate change and the big, societal issues it presents. The individual projects provide the opportunity to examine and reflect on your own relationship to the changing climate. Each project will focus on a different topic such as misinformation, your carbon footprint, and climate social justice. Projects are D2L-based and take 2-3 hours of focused work to complete.

Although unlikely, I reserve the right to alter the assessment scheme in order to accommodate for unforeseen circumstances or to better serve the learning objectives of the course. The deadlines of assignments and the dates of exams may change.

Policies

OFFICE HOURS

The times of my office hours are listed on page 1. By default, office hours are offered in-person on a first-come, first-serve basis. Please note that I may occasionally need to reschedule office hours, offer office hours via Zoom, or require an appointment. I will announce any change to office hours format in class as well as via the D2L announcement tool and/or email.

Please understand that office hours are a limited resource. Please come prepared with your materials at hand and specific items to review or discuss. It is not realistic to expect that I can meet with you frequently or meet for long periods of time.

ELECTRONIC DEVICES

Aside from stand-alone calculators, no electronic devices may be used in class. I've found that devices such as mobile phones, smart watches, ipods, tablets, and laptop computers are more distracting (for both the user and students around them) than useful.

ATTENDANCE

You are expected to attend and actively participate in class. Participation is a graded item in this course – see [Participation](#) above.

If you miss a class then it is your responsibility to make up the missed learning opportunity by reviewing course materials on your own. Missing class does not excuse you from completing other aspects of the course on time.

EXCUSED ABSENCES

This course adheres to the WCU [Excused Absences Policy](#). If you are unable to perform an aspect of the course due to a conflict recognized by this policy (which includes University-Sanctioned Events) you must notify me in advance so that we can make arrangements.

LATE OR MISSED WORK

If you suspect that you will not be able to meet a course deadline you must notify me in advance so that we can discuss possible resolutions. The default policies on late and missed work are as follows:

- **Participation:** Your participation is excused if a class activity conflicts with an event recognized by the WCU [Excused Absences Policy](#) – see [Excused absences](#). Beyond this, it is not possible to make up missed participation. Note that while participation is a graded item, I do not expect perfect attendance.

- **Homework:** In most cases, I am happy to provide a brief extension for a homework deadline if you make your request via email (imorrison@wcupa.edu) at least a few hours prior to the deadline. I am also willing, *on one occasion*, to re-open the most recent assignment so that you can complete the assignment for full credit. In addition, please note that the assessment scheme allows for several missed assignments without penalty – see [Assessment](#).
- **Exams:** In general, exams are not offered at alternate times. You may take an exam at an alternate time if:
 - i) The exam conflicts with an event which is recognized by the WCU [Excused Absences Policy](#) – see [Excused absences](#).
 - ii) You are sick and you adhere to the course sickness policies – see [If you get sick](#).Failure to take an exam results in a 0 score.
- **Individual projects:** Late work may receive a reduced score or may not be considered.

ACCOMMODATION

If you require accommodation for any aspect of the course you must notify me in advance so that we can make arrangements. Depending on the circumstances, I may require that you provide documentation verifying the situation.

- **OEA:** If you have an ongoing medical condition which effects your ability to meet the course expectations then you should register with the [Office of Educational Accessibility](#) (OEA). Please make your Letter of Accommodation available to me via the OEA portal.
- **Proctoring Center:** I cannot provide extra time in the classroom, nor can I guarantee a low-distraction environment, so if your Letter of Accommodation allows for these accommodations then you will need to use the [Proctoring Center](#) to complete exams. Schedule each reservation for the date the assessment is offered in class at the time of your choice. Please book your reservation for all exams ASAP, as availability is limited. Note that the center requires all booking requests to be submitted at least 5 business days in advance.
- **Health/wellness conditions:** If you seek accommodation for a medical condition which causes you to miss at least three consecutive school days, then contact [Student Assistance](#). I can offer accommodation based upon the advice of this office.
- **Personal emergencies:** Rarely, a personal emergency can arise which prevents a student from meeting course expectations. In such a rare circumstance I am happy to work with you in order to make appropriate arrangements. I may require that [Student Assistance](#) serve as a confidential liaison to verify the emergency.

IF YOU GET SICK

If you get sick then several of the policies above are relevant. Briefly:

- Obviously, if you are sick with a contagious disease then do not visit class or office hours.
- **If you will miss an exam due to illness and you notify me prior to the start of your exam time then you will receive equitable accommodation.** I may require documentation which verifies the situation.
- **If you miss an exam due to illness and you do not notify me prior to the start of your exam time then you will receive no accommodation.** You will earn a 0 score on the exam.
- You are expected to make up for missed class by reviewing course material on your own. Once you are healthy you are welcome to attend office hours; however, I cannot summarize an entire class during an office hours visit.

TUTORING

Tutoring may be available through the [Learning Assistance & Resource Center](#). This service is free, but availability is limited. Contact this center for details.

TECHNOLOGY

- **D2L:** Course materials are maintained on the course D2L site. You are responsible for regularly checking the course D2L site. I may not announce in class changes to course content on D2L. As with all technology, D2L can have glitches and service outages. For this reason, check D2L frequently and do not leave tasks to the last minute.
- **Communication:** I use the D2L announcement tool to make class-wide announcements. I use email for individual correspondence and for time-sensitive class-wide communications. Except in the event of a technical failure or an emergency, I will only use university email (mine and yours) to correspond.
- **Email:** Emails should be written with appropriate language and etiquette. Please consult the guide [here](#).
- **Zoom:** This course may use Zoom for virtual class meetings or office hours. You are expected have basic competence using Zoom. You may wish to consult the [IST Zoom documentation](#). You are welcome to blur your background, or use a virtual background, so long as the image is not inappropriate or distracting. Here are [instructions for setting up a virtual background](#), as well as [WCU-themed virtual background images](#). Zoom meetings will require that you use your WCUPA Zoom account (i.e., the one linked to your University email address).
- **Recording:** Students do not have permission to record class meetings, whether held in person or virtually. This includes recording audio or video, or taking photographs. Such recording may also be restricted by law. See [Accommodation](#) above and [Intellectual property](#) below.

ACADEMIC INTEGRITY

Students are expected to follow the WCU Student Code of Conduct and adhere to the rules and guidelines on academic integrity described in the [WCU Undergraduate Catalog](#). Here are a few relevant issues for this course:

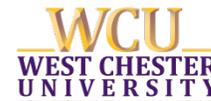
- **Online platforms:** Email, D2L and Zoom are extensions of the classroom and as such all WCU rules regarding student behavior apply on these platforms. Do not violate the copyrights of materials on these platforms. Do not misrepresent your identity on these platforms, either by impersonating someone else or by allowing another person to impersonate you.
- **Collaboration:** Students are encouraged to study together and collaborate on assignments. However, you should go through the process of answering each homework question yourself. Any written work must be your own language and thought.
- **Learning resources:** Students are welcome to use additional learning resources beyond those provided by the instructor to help them master course material. Examples of learning resources include textbooks, instructional videos, informational websites, and private tutors. Do not use any source of answers to assigned questions, whether found online or elsewhere. Do not use so-called tutoring websites which offer answers to questions upon request. These websites include (but are not limited to) Course Hero, Chegg, and Clutch Prep. You may not submit writing that has been generated with the aid of artificial intelligence (AI) tools such as Chat GPT and Bing. Using these sources or websites could lead to a violation of WCU rules on academic integrity. If you are unsure about whether the use of a website or product is legitimate, ask me before using.
- **Text recognition software:** Students agree that by taking this course all written assignments may be submitted for textual similarity review to [Turnitin](#) (directly or via D2L) for the detection of plagiarism. All assignments submitted to [Turnitin](#) will be included as source documents in the [Turnitin](#) reference database solely for the purpose of detecting plagiarism. If you do not wish for personal identifiers (student name, ID#, etc.) to be included in the [Turnitin](#) reference database then do not include them in your text. Use of [Turnitin](#) page service is subject to the Usage Policy and Privacy Pledge posted on the [Turnitin](#) site.
- **Copyright violations:** Course content contains intellectual property which is protected by copyright law. **Students do not have permission to share course content with any person, website, or entity.** Sharing includes posting content on a website or in a public place, or storing content on a computer that is used by others. See [Intellectual property](#) below.
- **Online activity logs:** Be aware that the course platforms D2L and Zoom provide records of user activity to the instructor and the University. In the event of a suspected academic integrity violation, this data will be examined and may serve as evidence of misconduct.

Students who violate WCU rules of academic integrity may receive an [Academic Integrity Violation Report](#), and may receive a failing grade (F) in the course.

INTELLECTUAL PROPERTY

The instructor utilizes copyrighted materials under the “Freedom and Innovation Revitalizing the United States Entrepreneurship Act of 2007” (Fair Use Act). Apart from such copyrighted materials, all other intellectual property associated with this course is owned and copyrighted by the instructor, including, but not limited to, lectures, course discussions, course notes, slides, assessment instruments such as exams, and supplementary materials posted or provided to students authored by the instructor. No recording, copying, storage in a retrieval system, or dissemination in any form by any means of the intellectual property of the instructor, in whole or in part, is permitted without prior written permission of the instructor. When such permission is granted, it must specify the utilization of the intellectual property and all such permissions and waivers shall terminate on the last day of the semester in which this course is held.

Statements Common to All WCU Undergraduate Syllabi



ACADEMIC & PERSONAL INTEGRITY

It is the responsibility of each student to adhere to the university's standards for academic integrity. Violations of academic integrity include any act that violates the rights of another student in academic work, that involves misrepresentation of your own work, or that disrupts the instruction of the course. Other violations include (but are not limited to): cheating on assignments or examinations; plagiarizing, which means copying any part of another's work and/or using ideas of another and presenting them as one's own without giving proper credit to the source; selling, purchasing, or exchanging of term papers; falsifying of information; and using your own work from one class to fulfill the assignment for another class without significant modification. Proof of academic misconduct can result in the automatic failure and removal from this course. For questions regarding Academic Integrity, the No-Grade Policy, Sexual Harassment, or the Student Code of Conduct, students are encouraged to refer to the Department Undergraduate Handbook, the Undergraduate Catalog, the Ram's Eye View, and the University website at www.wcupa.edu.

STUDENTS WITH DISABILITIES

West Chester University is committed to providing equitable access to the full WCU experience for Golden Rams of all abilities. Students should contact the Office of Educational Accessibility (OEA) to establish accommodations if they have had accommodations in the past or if they believe they may be eligible for accommodations due to a disability, whether or not it may be readily apparent. There is no deadline for disclosing to OEA or for requesting to use approved accommodations in a given course. However, accommodations can only be applied to future assignments or exams; that is, they can't be applied retroactively. Please share your letter from OEA as soon as possible so that we can discuss accommodations.

If you have concerns related to disability discrimination, please contact the university's ADA Coordinator in the Office of Diversity, Equity, and Inclusion: <https://www.wcupa.edu/admin/diversityEquityInclusion/> or 610-436-2433.

EXCUSED ABSENCES POLICY

Students are advised to carefully read and comply with the excused absences policy, including absences for university-sanctioned events, contained in the WCU Undergraduate Catalog. In particular, please note that the "responsibility for meeting academic requirements rests with the student," that this policy does not excuse students from completing required academic work, and that professors can require a "fair alternative" to attendance on those days that students must be absent from class in order to participate in a University-Sanctioned Event.

REPORTING INCIDENTS OF SEXUAL VIOLENCE

West Chester University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to comply with the requirements of Title IX of the Education Amendments of 1972 and the University's commitment to offering supportive measures in accordance with the new regulations issued under Title IX, the University requires faculty members to report incidents of sexual violence shared by students to the University's Title IX Coordinator. The only exceptions to the faculty member's reporting obligation are when incidents of sexual violence are communicated by a student during a classroom discussion, in a writing assignment for a class, or as part of a University-approved research project.

Faculty members are obligated to report sexual violence or any other abuse of a student who was, or is, a child (a person under 18 years of age) when the abuse allegedly occurred to the person designated in the University Protection of Minors Policy. Information regarding the reporting of sexual violence and the resources that are available to victims of sexual violence is set forth at: <https://www.wcupa.edu/admin/diversityEquityInclusion/sexualMisconduct/default.aspx>

INCLUSIVE LEARNING ENVIRONMENT AND ANTI-RACIST STATEMENT

Diversity, equity, and inclusion are central to West Chester University's mission as reflected in our [Mission Statement](#), [Values Statement](#), [Vision Statement](#) and [Strategic Plan: Pathways to Student Success](#). We disavow racism and all actions that silence, threaten, or degrade historically marginalized groups in the U.S. We acknowledge that all members of this learning community may experience harm stemming from forms of oppression including but not limited to classism, ableism, heterosexism, sexism, Islamophobia, anti-Semitism, and xenophobia, and recognize that these forms of oppression are compounded by racism. Our core commitment as an institution of higher education shapes our expectation for behavior within this learning community, which represents diverse individual beliefs, backgrounds, and experiences. Courteous and respectful behavior, interactions, and responses are expected from all members of the University. We must work together to make this a safe and productive learning environment for everyone. Part of this work is recognizing how race and other aspects of who we are shape our beliefs and our experiences as individuals. It is not enough to condemn acts of racism. For real, sustainable change, we must stand together as a diverse coalition against racism and oppression of any form, anywhere, at any time.

Resources for education and action are available through WCU's [Office for Diversity, Equity, and Inclusion](#) (ODEI), DEI committees within departments or colleges, the student [ombudsperson](#), and centers on campus committed to doing this work (e.g., [Dowdy Multicultural Center](#), [Center for Women and Gender Equity](#), and the [Center for Trans and Queer Advocacy](#)). Guidance on how to report incidents of discrimination and harassment is available at the University's [Office of Diversity, Equity and Inclusion](#).

EMERGENCY PREPAREDNESS

All students are encouraged to sign up for the University's free WCU ALERT service, which delivers official WCU emergency text messages directly to your cell phone. For more information, visit www.wcupa.edu/wcualert. To report an emergency, call the Department of Public Safety at 610-436-3311.

ELECTRONIC MAIL POLICY

It is expected that faculty, staff, and students activate and maintain regular access to University provided e-mail accounts. Official university communications, including those from your instructor, will be sent through your university e-mail account. You are responsible for accessing that mail to be sure to obtain official University communications. Failure to access will not exempt individuals from the responsibilities associated with this course.