

## ENV 201: Fundamentals of Environmental Science

Fall 2020

T Th 10:30-11:45 AM

CLCC 154 or Zoom

### Instructor

Dr. Becky Ball

CLCC 315D

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Office hours: Tu 12-1 PM, W 1:30-2:30 PM (Zoom-only)

or by appointment for 1:1 in-person

### Class info

Semester hours: 3

Pre-requisites: BIO 181, 182 & CHM 116

Co-requisites: None

Course Webpage: <https://asu.instructure.com/>

### Course Description

This course examines the functioning of the earth system and how it has changed over long and short time scales. The emphasis is on understanding global processes and how human activities can disrupt these processes, changing the ability of our global environment to support life. Important feedbacks between biological and physical processes and their effects on the biosphere are emphasized. The response of natural and managed ecosystems to global change will be discussed along with prospects for the future.

### Course Objectives

Students completing this course will be able to:

- Describe the major cycles of energy and matter and their influence over contemporary and past environmental conditions as they apply to the Earth system.
- Evaluate how human interactions with the biosphere contribute to contemporary global change.
- Explain observed and potential ecological consequences of global change in natural and managed environments.

### ASU Sync

This course uses Sync. ASU Sync is a technology-enhanced approach designed to meet the dynamic needs of the class. During Sync classes, students learn remotely through live class lectures, discussions, and study groups. You can find out more information about ASU Sync for students here, <https://provost.asu.edu/sync/students> and <https://www.asu.edu/about/fall-2020>.

To access live sessions of this class go to myASU and click the "Attend via Sync" button next to this class on your schedule, or go directly to: <https://asu.zoom.us/j/209653168>. In the case of internet problems, you can still join by phone for audio interaction: 602.753.0140 (meeting ID: 792 939 6631).

You have the choice of attending either entirely remotely, or to attend some class sessions in-person and be remote for other sessions to ensure we keep the room occupancy below 50%. The schedule for when you come to class will be shared with you via email prior to the start of class.

If you cannot physically be on campus due to travel restrictions or personal health concerns, you will be able to attend this class live via Zoom during the fall semester. If you will not be on-campus for the fall semester, you are expected to contact your professors to make accommodations.

### Community of Care

Stay Aware - Check the Novel Coronavirus webpage regularly: <https://eoss.asu.edu/health/announcements/coronavirus>

*Masking.* Everyone will be required to wear a mask while in ASU buildings. Face coverings will also be required in outdoor community spaces where social distancing isn't possible.

*Reporting.* Please be aware that as part of our Community of Care efforts, your instructor needs to report positive COVID-19 cases to the Dean of Students. Students can also report positive COVID test results to the Dean of Students at [deanofstudents@asu.edu](mailto:deanofstudents@asu.edu)

## Technology Requirements

This course will utilize three pieces of technology that require you to have the proper technology and an internet connection: Canvas, Zoom, and iClicker. If you are not able to personally finance the equipment you need to attend class via ASU Sync, ASU has a laptop and WiFi hotspot checkout program available through [ASU Library](#).

*Zoom.* This course will be live streamed during our assigned class time, accessible anywhere with the proper technology. We encourage you to use a PC or Apple laptop or desktop equipped with a built-in or standalone webcam. You will need an internet connection that can effectively stream live broadcasts. It is recommended that your internet download speed is at least 5.0 mbps. You can use this [tool to test your current connection](#).

*iClicker.* You will participate in class activities using iClicker, regardless of whether you are in the classroom or attending remotely. This may be done from a web browser on your computer or via the app on your smart phone. The subscription is free for ASU students, and you do NOT need to purchase the official remote. You will need to set up a (free) account ([www.iclicker.com](http://www.iclicker.com)) using your ASU information. Please establish your account prior to the first class. The process for connecting to this specific class and methods for interaction will be reviewed on the first day of class. Information on how to set up your account: <https://uto.asu.edu/services/tools/clickers/students/KBA>

*Canvas.* The Canvas site for this course will be our hub for sharing course materials, downloading and submitting assignments, and grading and feedback. Check the site regularly.

## Course Reading

### Required Text

Friedland, A. and Relyea, R. 2015. *Essentials of Environmental Science*. 2<sup>nd</sup> Edition. WH Freeman & Co.

### Journal articles

Journal articles are listed in the “Reading Links” module on Canvas™ and available online through ASU’s library’s electronic journals. A demonstration on how to access and use Electronic Journals will be made during class.

## Grading

		Grading Scale	
Assignments	50%	90% ≤ A ≤	100%
Daily Discussion/Journaling	20%	80% ≤ B ≤	89.9%
Quizzes	30%	70% ≤ C ≤	79.9%
		60% ≤ D ≤	69.9%
		E ≤	59.9%

## Assignments

There are 5 assignments that will introduce and practice basic concepts in environmental science to reinforce topics covered in lecture. Assignments will be assigned and explained during class, due by 8:00 A.M. on the specified date. Each assignment is worth 10% of your final class grade. Students may discuss the assignments with one another, but written work must be completed individually. Citations should be formatted according to the file “Properly Formatting References” on Canvas. *No late assignments will be accepted for full credit without prior permission of the instructor.*

## Discussion / Journaling

Learning is not a spectator sport! You will document your understanding of lecture material and participation in class discussion by answering questions posed during lecture via iClicker during class (aka “journaling”). Therefore, you should bring an internet-ready device each class to answer questions, as questions must be answered during class when discussions are being held. Questions posed in this medium are often checking your understanding of complex concepts, as well as challenging you to think beyond the material. Therefore, these questions are numerous, but individually low-stakes. Questions are asked each class, though the number varies among class periods. Your grade in this category will be calculated as the percent of total possible points earned over the course of the semester, accounting for 20% of your final grade:

## Quizzes

In place of the traditional large-exam style of assessing knowledge, we will instead have frequent smaller-scale quizzes that assess the same knowledge in more manageable chunks. Quizzes will be given during class and completed online via Canvas (therefore, able to be completed remotely). The format of the quizzes will be a combination of short answer and applications from the problem sets. Quizzes are open book and self-paced, but they will NOT be questions for which you can easily Google key words to find the answers, but instead require you to process the information being covered in class. Therefore, if you are not keeping up with course material, you

will not do well on the quizzes. There will be six quizzes, each worth 5% of your final grade, for a total of 30%. **Bring a calculator for quizzes.**

### **Instructor communication:**

The best way to contact me is by email. I will typically respond within 24-48 hours. If I do not respond in 2 days, call or email again. A lack of response should never be interpreted as agreeing to your request! If I have not responded, it is because I did not receive your email, and you need to try again.

ASU email is an official means of communication among students, faculty, and staff. Students are expected to read and act upon email in a timely fashion. Students bear the responsibility of missed messages and should check their ASU-assigned email regularly. **All instructor correspondence will be sent to your ASU email account.**

### **Course Policies and Expectations:**

*Assignments.* Written assignments must be word-processed and spell-checked. Use of the Writing Center is strongly encouraged (<http://studentsuccess.asu.edu/writingcenters>). Your name should appear at the top of each assignment. Please submit your work electronically as a PDF or a Word (.doc or .docx) document using the Assignment feature on Canvas. All assignments must be turned in on time to be eligible for full credit; 10% of your grade will be automatically deducted *per day* for days 1 and 2 late. Assignments will not be accepted more than 2 days late.

*Attendance/absence policy.* In addition to the instructor's general policy on absences and missed work, excused absences and conditions for making up work include "Accommodation of Religious Practices" (<https://www.asu.edu/aad/manuals/acd/acd304-04.html>) and "Missed Classes Due to University-Sanctioned Activities" (<https://www.asu.edu/aad/manuals/acd/acd304-02.html>). Students must notify their instructors of these absences as early as possible in the semester. However, if an emergency arises that causes you to miss class, **communication is key!** Contact the professor and/or classmates to learn what you missed, and **you will be required to provide evidence of the emergency** (e.g., doctor's note, obituaries, police report, etc.) if your absence caused you to miss an exam or assignment. Please note that work schedules, vacation travel, meetings on other campuses, homework load, and sleepiness *do not* count as emergencies.

*Academic Integrity.* <https://provost.asu.edu/academic-integrity> Each student has an obligation to act with honesty and integrity, and to respect the rights of others in carrying out all academic assignments. Violations of the University Academic Integrity policy will not be ignored. Penalties include reduced or no credit for submitted work, a failing grade in the class, a note on your official transcript that shows you were punished for cheating, suspension, expulsion and revocation of already awarded degrees. The university requires that the implementation of any of these penalties for violations of the academic integrity policy be reported to the College's Academic Integrity Officer. The Academic Integrity Policy defines the process to be used if the student wishes to appeal this action.

*ASU Student Code of Conduct.* <https://eoss.asu.edu/dos/srr/codeofconduct> Students are expected to follow the student code of conduct, especially when communicating with your peers and instructors. Violations of the student code of conduct may result in withdrawal from the class.

*Reasonable Accommodations for Students with Disabilities.* The Disability Resource Center (DRC) provides information and services to students with any documented disability who are attending ASU West. Individualized program strategies and recommendations are available for each student as well as current information regarding community resources. Students also may have access to specialized equipment and supportive services and should contact the instructor for accommodations that are necessary for course completion.

*Study and Preparation Time.* The Arizona Board of Regents specifies that students are expected to spend at least two hours per week on course-related research and scholarly activities per course credit. This means that each week you should expect to spend at least six hours preparing for class.

*Final Exam Make-up Policy.* The final exam schedule listed in the Schedule of Classes will be strictly followed. Exceptions to the schedule and requests for make-up examinations can be granted only by the Associate Director of the School of Mathematical and Natural Sciences for one of the following reasons: 1) religious conflict; 2) the student has more than three exams scheduled on the same day; 3) two finals are scheduled to

occur at the same time. Make-up exams will NOT be given for reasons of non-refundable airline tickets, vacation plans, work schedules, weddings, family reunions, or other such activities. Students should consult the final exam schedule before making end-of-semester travel plans. If there is a last-minute personal or medical emergency, the student may receive a grade of Incomplete and makeup the final within one calendar month. The student must provide written documentation and be passing the class at the time to receive an Incomplete. A signed "Request for Grade of Incomplete" must be submitted by the student and approved by the student's instructor and the Associate Director of the School of Mathematical and Natural Sciences.

*The Grade of Incomplete.* A grade of incomplete will be awarded only in the event that a documented emergency or illness prevents a student who is doing acceptable work from completing a small percentage of the course requirements at the end of the semester. The guidelines in the current general ASU catalog regarding a grade of incomplete will be strictly followed. **A grade of incomplete will NOT be awarded unless there is documented evidence of extreme personal or immediate family hardship.** Changes in work hours, child-care emergencies, or other similar personal problems will not be approved as reasons for awarding incompletes. The Director of the School of Mathematical and Natural Sciences must approve all incomplete grade requests.

*Course/Instructor Evaluation.* The course/instructor evaluation for this course will be conducted online 7-10 days before the last official day of classes of each semester or summer session. Your response(s) to the course/instructor are anonymous and will not be returned to your instructor until after grades have been submitted. The use of a course/instructor evaluation is an important process that allows our college to (1) help faculty improve their instruction, (2) help administrators evaluate instructional quality, (3) ensure high standards of teaching, and (4) ultimately improve instruction and student learning over time. Completion of the evaluation is not required for you to pass this class and will not affect your grade, but your cooperation and participation in this process is critical. About two weeks before the class finishes, watch for an e-mail with "NCIAS Course/Instructor Evaluation" in the subject heading. The email will be sent to your official ASU e-mail address.

*Withdrawals.* It is the student's responsibility to be aware of their registration status. **The instructor will NOT withdraw students for any reason.** Specifically, students should be aware that non-attendance will NOT automatically result in their being dropped from the course. Therefore, if a student does not attend class during the first week or for any extended period of time during the semester, they should not presume that they are no longer registered.

**Please note the following dates:**

Drop/Add Deadline	August 26, 2020
Tuition and Fees 100% Refund Deadline	September 2, 2020
Course Withdrawal Deadline	November 4, 2020
Complete Withdrawal Deadline	December 4, 2020

\*As part of a complete session withdrawal a student must withdraw from all classes in a session. Beginning the first day of classes, undergraduate students are required to work with a Student Retention Coordinator to facilitate the withdrawal process. Please refer to <http://students.asu.edu/StudentRetention>. Any withdrawal transaction must be completed by the deadline date in accordance to the appropriate session at the registrar's office. If not, you will still be officially enrolled and you will receive a grade based on your work completed. For additional information about ASU's withdrawal policy and the possible consequences of withdrawing from a class, contact Registration Services or your academic counselor. **Students are responsible for their registration status!**

*Policy against Threatening Behavior.* <http://www.asu.edu/aad/manuals/ssm/ssm104-02.html> In the classroom and out students are required to conduct themselves in a manner that promotes an environment that is safe and conducive to learning and conducting other university-related business. All incidents and allegations of violent or threatening conduct by an ASU student will be reported to the ASU Police Department (ASU PD) and the Office of the Dean of Students. Such incidents will be dealt with in accordance with the policies and procedures described in Section 104-02 of the Student Services Manual.

*Title IX.* Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and harassment based on sex is prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and academic support, from the university. If you or someone you know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at

<https://sexualviolenceprevention.asu.edu/faqs>. As mandated reporters, faculty are obligated to report any information of which they become aware regarding alleged acts of sexual discrimination, including sexual violence and dating violence. ASU Counseling Services, <https://eoss.asu.edu/counseling>, is available if you wish discuss any concerns confidentially and privately.

*Emergencies/Campus Power Outage.* In the event of a campus power outage or other event affecting the ability of the University to deliver classes, any decision to cancel classes will be announced using the ASU emergency notification system. For this reason, it is imperative that students register with the ASU emergency notification system at: <https://cfo.asu.edu/emergency-alert>. In cases in which a limited number of buildings are affected, students should check the university website and/or call the School office at (602) 543-6050.

*Evacuation Plan.* Students should be aware of the evacuation route posted on the exit door of each classroom. Students who cannot walk down stairs should notify the instructor as early in the course as possible so the instructor can provide information regarding the location of the designated meeting area on each upper floor of the building (marked with a blue sign that states Emergency Evacuation Response Area).

*Assessments.* Please be aware that student scores on exams or other graded work may be used for assessment of program goals of degrees offered by the School of Mathematical and Natural Sciences.

*Recording of Lectures.* Our aim is to create a learning environment where all feel free to contribute; thus any recording of class sessions is prohibited (with the exception of those who have a DRC-approved accommodation), or the express consent of the instructor). No one should post any verbatim accounts of class discussion or say anything that could identify a class member on social media without the express permission of the class member.

*Copyright Infringement.* Students must refrain from uploading to any course shell, discussion board, or website used by the course instructor, or any other forum/site not owned by the instructor, material that is not the student's original work, unless the students first comply with all applicable copyright laws. Faculty members reserve the right to delete materials on the grounds of suspected copyright infringement. This right does not exempt posting to any site class notes, discussions, homework, exams, and any other course-related materials to include study materials without the instructors permission. Such posting explicitly violates copyright laws and the ASU academic integrity policy. *Subject to Change.* All class syllabi are subject to minor changes as necessary to accommodate the needs of the instructor, school, or class.

*The syllabus is a statement of intent and serves as an implicit agreement between the instructor and the student. Every effort will be made to avoid changing the course schedule but the possibility exists that unforeseen events will make syllabus changes necessary. Remember to check your ASU email and the course site often.*

<b>Week</b>	<b>Date</b>	<b>Topic</b>	<b>Reading Assignments Due</b>
1	Th 8/20	Course overview, Syllabus and policies, Intro to the global environment	<i>Chapter 1</i>
2	Tu 8/25	The earth system: matter and energy	<i>Chapter 2</i>
	Th 8/27	Global energy balance and circulation	<i>Chapter 3, p61-77</i>
3	Tu 9/1	The evolution of the biosphere and atmosphere	<i>Chapter 4, p81-90</i>
	Th 9/3	The earth system: wrap-up and Quiz 1	
4	Tu 9/8	Ecosystem ecology	<i>Chapter 3, p49-60</i>
	Th 9/10	Carbon cycling Assignment 1: Biogeochemical Cycles	
5	Tu 9/15	Nitrogen, phosphorus, and sulfur cycling	<i>Liu 2013</i>
	Th 9/17	Geological and soil processes	<i>Chapter 6</i> <b>Assignment 1 due</b>
6	Tu 9/22	Biogeochemistry: wrap-up and Quiz 2	
	Th 9/24	Human population and consumption	<i>Chapters 4 (p91-96) &amp; 5</i>
7	Tu 9/29	Agriculture	<i>Chapter 7 (p166-176)</i>
	Th 10/1	Water resources Assignment 2: Water Resources	<i>Chapter 9 (p215-225)</i> <i>Famiglietti 2014</i>
8	Tu 10/6	Water pollution	<i>Chapter 9 (p226-237)</i>
	Th 10/8	Resource use: wrap-up and Quiz 3	
9	Tu 10/13	Air pollution	<i>Chapter 10</i> <b>Assignment 2 due</b>
	Th 10/15	Long-term climate change Assignment 3: Trends in Atmospheric CO <sub>2</sub>	<i>Chapter 14</i>
10	Tu 10/20	Short-term climate change	
	Th 10/22	Careers & Internships in ENV	
11	Tu 10/27	Contemporary climate change	<i>IPCC 2014</i> <b>Assignment 3 due</b>
	Th 10/29	Discussion: climate in the media Air & Climate: wrap-up and Quiz 4	
12	Tu 11/3	Human health & toxicology	<i>Chapter 11 &amp; 12</i>
	Th 11/5	Biodiversity Assignment 4: Encyclopedia of Life	<i>Chapter 13</i>
13	Tu 11/10	Land use	<i>Chapter 7 (p158-165)</i> <i>Newbold et al. 2015</i>
	Th 11/12	Discussion: case studies	<b>Assignment 4 due</b>
14	Tu 11/17	Land & Biodiversity: wrap-up and Quiz 5	
	Th 11/19	Forecasts, uncertainties, and politics Assignment 5: News Analysis	
15	Tu 11/24	Energy: resources and consumption	<i>Chapter 8</i>
	Th 11/26	<b>NO CLASS - THANKSGIVING</b>	
16	Tu 12/1	Environmental science in the media	<b>Assignment 5 due</b>
	Th 12/3	Environmental economics Synthesis, conclusion, and Quiz 6	