

ENVS 202 Introduction to Environmental Studies: Natural Sciences

CRN: 22804

Instructor: Prof. Kory Russel,
Lawrence Hall, Room 215
krussel@uoregon.edu
Office Hours, Wed. 10am-Noon, sign up at <http://bit.ly/2EkNALy>

Lecture:

Tuesday + Thursday: Noon to 1:20pm in 123 Global Scholars Hall

| | email | office hours | location |
|-----------------|--|--|-------------------|
| Kory Russel | krussel@uoregon.edu | Wednesday 10 - noon | 215 Lawrence Hall |
| Laura Johnson | ljohnso8@uoregon.edu | Thursday 10am-11 am and 2:00pm-3:00pm | 47A Columbia |
| Ben Hinde | bhinde@uoregon.edu | Wednesday 1pm – 3pm | 254A Columbia |
| Nathaniel Otjen | notjen@uoregon.edu | Tuesday 1:30pm–2:30PM and Thursday 10:30am-11:30am | 254A Columbia |

Discussion Sections:

| time | room | GTF | CRN |
|-------------|--------------|-----------------|-------|
| Friday 8AM | 142 Columbia | Laura Johnson | 22805 |
| Friday 9AM | 142 Columbia | Laura Johnson | 22806 |
| Friday 10AM | 142 Columbia | Laura Johnson | 22807 |
| Friday 11AM | 142 Columbia | Ben Hinde | 22808 |
| Friday Noon | 142 Columbia | Ben Hinde | 22809 |
| Friday 1 PM | 142 Columbia | Ben Hinde | 22810 |
| Friday 2 PM | 142 Columbia | Nathaniel Otjen | 22811 |
| Friday 3 PM | 142 Columbia | Nathaniel Otjen | 22812 |
| Friday 4 PM | 142 Columbia | Nathaniel Otjen | 22813 |

Overview:

This course is part of the three-term core sequence in Environmental Studies and is required for Environmental Studies, but not Environmental Science majors. It is an introductory course, designed for freshmen and sophomores, and satisfies university general education breadth requirements for natural sciences. ENVS 201, 202, 203 may be taken in any order.

Course description

The natural and applied sciences underlying contemporary environmental issues – microbiology, physiology, aquatic and atmospheric chemistry, population ecology, freshwater hydrology, oceanography, climate science, fluid dynamics, agronomy, wind, solar, and nuclear engineering, transportation engineering, and many others – are essential background for environmental decision-making at all scales. With an understanding of photosynthesis, the carbon biogeochemical cycle, and contemporary agricultural practices, for example, one can better evaluate conflicting claims regarding the benefits and harms of particular biofuels. This course is focused on the acquisition and use of such evidence, i.e. quantitative, scientific evidence, to support and refute arguments surrounding environmental issues. In this way, it promotes the acquisition of “science literacy”, the ability to work fluently with observations, measurements, model predictions, survey results, maps, graphs, and other forms of scientific data toward a desired end: an evidence-based argument, policy, interpretation, or perspective. By the end of this course, successful students will be well-prepared to recruit reliable scientific evidence to address the numerous environmental questions they will ultimately encounter.

Goals and learning objectives:

By the end of the term, you should be able to:

- describe the value and limitation of science in understanding environmental issues
- explain how scientific research is done and what motivates scientists
- identify causal relationships, feedback loops, and construct concept maps
- interpret and analyze information presented in graphical format
- talk and write in an informed way about several environmental issues including:
 - ecosystem change, species diversity, keystone species, indicator species
 - population ecology models and their application to humans and wildlife
 - Earth’s atmosphere, climate change, and human impacts on climate change
- have confidence in your ability to make decisions consistent with your knowledge and values about one environmental issue that is of special interest to you

Important Dates:

- Tests: January 30, February 13; February 22, March 8, **and Tuesday, March 20 at 8:00 AM**
- Homework due in section January 27, February 3, and February 17
- CCC reflection paper: due in section the week after your event
- Annotated Bibliography due Feb 24
- Project Presentations: March 3 and March 10

Final Exam: Tuesday, March 20, at 8:00AM

Required Texts:

There is no required textbook or course pack. Readings will be taken from a variety of sources and available as a PDF or link through Canvas. Make sure to look on Canvas before each class to find the readings that should be completed for class.

Grading Philosophy and Criteria:

If you get 90% or more of the total possible points, you will receive a grade of A- or higher; if you get 80% or more you will receive a grade of B- or higher; 70% or more ensures a grade of C- or higher. What does this mean for you? I don't grade you by comparing your work to the others in the class (that is what I think of as grading on a curve.) If you do excellent work, in our judgment, you will get an A, good work earns a B, satisfactory work earns a C. Course grades are based on performance, not on effort, but it is rare that anyone who comes to class regularly, does the reading, and puts a serious effort into studying gets less than a C. The number of points needed for a given grade may be lowered, but will not be raised (this is what students often think of as grading on a curve).

Courses applied to the Environmental Studies major and minor must be taken for a letter grade.

Expectations:

It is expected that students work diligently with the understanding that the quality of their work matters, both for their own learning but also for the course community they are a part of. As a 4-credit course, students should expect to spend ~12 hours per week on the course.

Grading:

| | |
|------------------------------|---|
| Engagement and participation | (8%) |
| CCC Project and write-up | (6%) |
| Term Project | (20%) – (10% bibliography and 10% presentation) |
| Homework | (18%) – (6% for each of three homeworks) |
| Tests | (48%) – (12% for each of 4 tests) |
| Final Exam | (optional see below) |

A passing grade indicates that you have achieved the Learning Objectives stated above, have completed all assigned work, and participated in group discussions. The following grade breakdowns are provided to help you understand what a passing grade will entail:

- A 100 – 90 % ---- Excellent. Ideas are clearly stated and developed. Specific examples are appropriate and help develop claims. Student not only demonstrates full knowledge of subject, but also demonstrates insight, invention, critical thought and ability to elaborate.
- B 80 - 89 % ----- Good (satisfactory for graduate level work). Meets expectations

- for assignments, analysis and critique.
- C 70 - 79 % ----- Average. Work is competent. Student demonstrates reasonable awareness and knowledge of subject, but fails to elaborate; work is often not supported by specific examples, analysis or synthesis.
- D 60 - 69 % ----- Inferior. Notably lacking preparation; project/assignment content may be irrelevant or dispersive.
- F 59% or less ---- Failing. Work is incomplete, not understandable or logical, poorly organized. Student doesn't have grasp of information, and can't answer questions about subject.

Classroom Conduct:

Please talk to Prof. Russel or to your GE as soon as possible if you have questions about what is expected of you in this class or how you will be graded.

We expect everyone to follow University rules and guidelines for behavior. Academic dishonesty, which includes cheating and plagiarism, is a serious offense and will be treated according to the guidelines in the [student conduct code \(http://dos.uoregon.edu/\)](http://dos.uoregon.edu/) This doesn't mean you shouldn't talk with other students about what you are thinking or writing; it does mean that when you write something, it should be in your own words, not copied from someone else. Information about avoiding plagiarism is available at <http://researchguides.uoregon.edu/citing-plagiarism>.

We ask that everyone do their best to be intellectually honest while also being respectful of personal differences. We welcome and encourage intellectual controversy-- it is essential to real learning. At the same time, we ask that everyone respect the rights of others to hold different opinions, even as we challenge the ideas supporting those opinions. The grade you earn will be a reflection of the quality of work you have done, but not of you as a person.

Activities that violate personal and institutional academic integrity include:

Fraud: The alteration of documents or data with the intent to deceive groupmates or the instructor.

Copying: Creating a submission for a graded exercise by reproducing another student's work.

Fabrication: Falsification or invention of information.

Plagiarism: Representing the work of another as one's own by omitting acknowledgement or reference.

Sabotage: Destruction of another's work.

If academic dishonesty is suspected, the instructor will meet with the student(s) involved to review the evidence and allow student(s) the opportunity to explain. If the instructor concludes that a violation occurred, penalties will be assessed as follows:

First or minor violation: Written warning and requirement to re-do the assignment in question.

Second or significant violation: A grade of zero on the assignment in question and referral to the Dean of Students, including the instructor's written summary of events and copies of supporting documentation.

Please refer to the University of Oregon Academic Integrity website (integrity.uoregon.edu) for further details.

Out of respect for other students, you should plan to arrive at class on time and stay until class is over. If, on occasion, you do arrive late, please be considerate of others and enter in such a way that you don't disturb other students. If you need to leave early, please sit near an exit so that you can leave without disrupting the class. We ask that you not interfere with the ability of other students to learn by making noise when others (instructors or classmates) are speaking or working. Cell phones should not be used in class. Failure to follow these guidelines may lead to a lowered participation score.

Crises happen. If you have problems that interfere with your ability to do the work in this class, please let us know promptly. We are willing to make special arrangements when the need is real **and** when you have done your best to deal with the situation in a timely manner. The University of Oregon Counseling Center provides students with confidential consultation 24 hours a day, 7 days a week. From 8-5 Monday through Friday you will be connected with the front desk, and after hours, the same number connects to their support line. **Their number is (541) 346-3227.** Students often believe that their issues are not "severe" enough for them to call, but at the Counseling Center, there is no problem too small.

Illness:

Students who are sneezing, coughing, or otherwise clearly ill should stay home to speed recovery and avoid infecting others. The two absences for illness will be excused with email notification by the morning of class; a doctor's note will be required to excuse further absences. Other excusable absences (for example, involving academic or university athletic trips) will be excused with documentation.

Late and missing work policy:

Unavoidable conflicts and emergencies are to be expected, and we will accommodate all excusable absences with valid documentation (e.g. note from a doctor, coach, etc.) as appropriate. Otherwise, timeliness is expected for all course activities. Late homework will not be accepted. Missed tests may not be made up. Missed tests will be replaced with alternatives of the instructor's choosing, if excused. To preserve test integrity, tests may not be taken early.

Discussion Sections:

Discussion sections help you to practice important skills, such as public

speaking, respectful and active listening, considering and evaluating other people's viewpoints, and formulating your own viewpoints. Attendance will be taken for the discussion sections and will count towards your participation grade. You must attend the section for which you are registered. Homework and other class assignments will be turned in, discussed, and returned in discussion section.

Participation and Engagement:

Eight percent of your grade is attributed to participation and engagement. Attendance and active involvement in sections are primary ways to earn participation points. Participation is not simply measured by how vocal you are, however. Other ways to participate include sharing news stories or events with classmates. **Missing class (lecture or discussion), arriving late, leaving early, talking, texting, web surfing during class, or otherwise not participating fully will lead to a reduction in your participation grade.** A couple of times during the term we may have guest scientists come to talk about their work. These are important parts of the course that cannot easily be made up. Don't miss these and don't tune out if a guest comes to talk to us.

Homework:

Eighteen percent of your grade comes from written homework assignments. You can think of these as take-home tests of sorts. It is acceptable to talk to others about the homework, but **you must write your own answers.** The homework is also intended to help to prepare you to do well on the in-class tests and final exam. Homework is due at the start of your discussion section; we will not accept late work. Answers to some homework questions will be posted after the last discussion section meets but before tests or the final exam. Homework assignments and answer keys will be found at: <https://canvas.uoregon.edu>

Tests:

Some test questions may ask you to apply, synthesize, or evaluate information. This is harder than simply recalling facts. Make-up tests will not be given, so note the dates of the tests carefully and don't make plans to be out of town on any of those dates. The final exam (test) will be cumulative. Notice that **the final exam is scheduled for Tuesday of finals week at 8:00 AM and cannot be taken earlier.** The final is optional. If you are satisfied with your grade based on all four tests, you may elect to not take the final. If you take the final, it and your top three test scores will account for the test portion of your grade.

Term project:

The term project allows you to explore a particular issue in more depth. There are two components to the project: an annotated bibliography done

individually, and a presentation to your classmates done in groups of three. A separate handout will describe the project more fully.

Classroom Community Connection (CCC):

This project is designed to place you in the community to see how one of the topics we are learning about is applied in the community. You will do a short service project (part of a day) and write a reflection paper about your work and its relation to environmental science concepts. A separate information sheet will provide details.

How to do well in this course:

- Attend all class functions (lectures and discussions), arrive on time, stay engaged, turn off electronic devices not related to academic work.
- Follow policies set by your GE regarding attendance, participation, office hours, email.
- Spend several hours each week outside of class studying. Suggested study techniques:
 - Do the assigned reading in advance or at least skim through the material so that you know what is there and can go back and read in more depth later.
 - Make use of the course web page and the lecture notes and outlines on it, but do not try to use these as a replacement for attending class.
 - Ask questions in lecture. Ask questions in discussion. Ask questions in office hours
 - Get together with someone else in the class at least once a week to study. Keep the big picture in mind by asking yourself how what you are learning relates to current environmental issues
- Don't believe everything you hear or read; back up your opinions with credible evidence and logic. **Other resources and forms of support ***

Inclusive Access:

The University of Oregon works to create inclusive learning environments. If you experience difficulty in this course for any reason, please don't hesitate to contact Prof. Russel. It is especially important that you notify me within the first two weeks of the term if aspects of the instruction or course design present obstacles to your active participation or prevent you from fully demonstrating your abilities. Such obstacles may include, but are not limited to issues concerning physical access and mobility, physical or mental health and well-being, and academic learning. I need to know about such issues so that we can discuss necessary approaches to ensure your full participation and facilitate your learning process. The

university offers a wide range of services to support students in their efforts to learn and meet course requirements, including the following:

- *Accessible Education Center (AEC)*: The AEC is dedicated to facilitating and supporting accessible education through active collaboration with students, faculty, staff, and the community. The AEC works to create and sustain physical, curricular, and informational environments that are informed by and response to the diverse characteristics and experiences of students with disabilities and variations of ability. Web: <http://aec.uoregon.edu/> - Phone: 541-346-1155
- *University Counseling and Testing Center (UCTC)*: The UCTC provides comprehensive mental health care and testing services to the University of Oregon campus. The primary mission of the UCTC is to provide quality clinical/therapeutic services, psychological testing and assessment, psychoeducational workshops, and outreach as well as emergency services. Web: <http://counseling.uoregon.edu/dnn/> - Phone: 541-346-3227
- *Teaching and Learning Center (TLC)*: TLC provides numerous resources (including courses, workshop, tutoring, and math and writing labs) to help UO students succeed. They work with a diverse student body with a wide range of needs. If you are unsure which resources would work best, they are happy to answer questions and share suggestions. Web: <http://tlc.uoregon.edu/> - Phone: 541-346-3226

Diversity:

The University of Oregon is dedicated to the principles of equal opportunity in education and an acceptance of diversity as an affirmation of individual identity within a welcoming community. Open inquiry, freedom of expression, and respect for difference are therefore fundamental to a comprehensive and dynamic education. This course is committed to upholding these ideals by encouraging the exploration, engagement, and expression of divergent perspectives and diverse identities. Please do not hesitate to contact me if you feel aspects of the instruction or course design, or classroom activities undermine these principles. You may also notify the ENVIS Program at 541-346-5000. For additional assistance and resources, I encourage you to contact the following campus services, as appropriate for your concerns:

- *Office of the Vice President for Equity and Inclusion*: This Office promotes inclusive excellence by working to ensure equitable access to opportunities, benefits, and resources for all faculty, administrators, students, and community members. Web:

<http://diversity.uoregon.edu/> - Phone: 541-346-3175

- *Bias Response Team (BRT)*: The BRT works to gather information about bias incidents and to support those who have witnessed, or have become a target, of an act of bias. The BRT provides targets of bias a safe space to have their voices heard, to promote civility and respect, to effect change around these important issues in a quick and effective manner, and to ensure a comprehensive response to bias incidents.
Web: <http://bias.uoregon.edu> - Phone: 541-346-1134

**thanks to Kathy Lynn and Jason Schreiner for assembling and sharing information on this page*

| Week | Tuesday | Thursday | Due in Section |
|---|---|--|---|
| 1: The Scientific Method | <ul style="list-style-type: none"> Jan 9 What is Environmental Science? | <ul style="list-style-type: none"> Jan 11 The Scientific Method | <ul style="list-style-type: none"> Jan 12 Concept maps, causal maps |
| 2: Ecology and ecosystems | <ul style="list-style-type: none"> Jan 16 Evolution and Ecology | <ul style="list-style-type: none"> Jan 18 Ecosystem Change | <ul style="list-style-type: none"> Jan 19 Term Project introduction: Finding, evaluating resources; form groups Need a laptop if possible |
| 3. Ecosystem design and protection | <ul style="list-style-type: none"> Jan 23 Ecosystem Health and Restoration | <ul style="list-style-type: none"> Jan 25 Ecosystem Services | <ul style="list-style-type: none"> Jan 26 Homework 1 – DUE Discuss Readings |
| 4. Biodiversity | <ul style="list-style-type: none"> Jan 30 Test 1: Lectures 1–4 Biodiversity; Keystone, indicator species | <ul style="list-style-type: none"> Feb 1 Invasive Species | <ul style="list-style-type: none"> Feb 2 Visit MNCH H2O Exhibit |
| 5. Population Ecology | <ul style="list-style-type: none"> Feb 6 Population Ecology Models | <ul style="list-style-type: none"> Feb 8 Human Demography | <ul style="list-style-type: none"> Feb 9 Homework 2 – DUE Discuss Readings Issues groups meet Presentation tips and rubric |
| 6. The Sixth Extinction | <ul style="list-style-type: none"> Feb 13 Test 2: Lectures 5–8 The Sixth Extinction | <ul style="list-style-type: none"> Feb 15 Welcome to the Anthropocene | <ul style="list-style-type: none"> Feb 16 Homework 3 – DUE Population Simulator Exercise |
| 7. Sustainable Agriculture | <ul style="list-style-type: none"> Feb 20 Agricultural resources: Soil and nutrients | <ul style="list-style-type: none"> Feb 22 Test 3: Lectures 9–11 The Future of Sustainable Agriculture | <ul style="list-style-type: none"> Feb 23 Annotated Bibliography – DUE Discuss Readings Presentation Planning |

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| 8. Water and Air | <ul style="list-style-type: none"> ▪ Feb 27 Clean Water and the hydrologic cycle | <ul style="list-style-type: none"> ▪ March 1 Atmosphere, climate and weather | <ul style="list-style-type: none"> ▪ March 2 Project Presentation Session 1 |
| 9. Fuels and Efficiency | <ul style="list-style-type: none"> ▪ March 6 Fuels, Fossil & Otherwise | <ul style="list-style-type: none"> ▪ March 8 Test 4: Lectures 12–17 Alternative energy systems and consumption | <ul style="list-style-type: none"> ▪ March 9 Project Presentation Session 2 |
| 10. Our Future on a Hotter Planet | <ul style="list-style-type: none"> ▪ March 13 Climate Change | <ul style="list-style-type: none"> ▪ March 15 Hope and Optimism | <ul style="list-style-type: none"> ▪ March 16 Carbon simulator exercise Exam Review Bring Laptop if Possible |
| 11. Exam Week | FINAL EXAM: Tuesday 8–10am Location TBA | | |

---Important note: While the class is expected to follow the above schedule, Prof. Russel may change certain elements or dates during the quarter if it will enhance or accomodate a better learning experience----