

ENV 110 Future of Natural Resources

Syllabus

COURSE DESCRIPTION:

In this freshman-level lecture and lab-based natural science course offered for students in the Discovery Program, students will study how science can contribute to solutions to contemporary issues and experience how the scientific process unfolds to make such contributions. In particular, students will study the theme (The Future of Natural Resources) through readings, classroom activities, lectures, laboratories, and student research projects. Topics covered will include factors that influence real world decisions made about the course theme (e.g. political, economic, ethical factors). During the six hours of class meetings each week, lecture and lab components will be integrated. Field trips will be required. This course satisfies the science disciplinary perspectives requirement for the general education program in the College of Liberal Arts and Sciences. Students who complete the course also earn three points for Rider's Engaged Learning Program in the Civic and Community Engagement category.

Instructor Info: Dr. Kathy Browne; Science 324C; browne@rider.edu; 609-895-5408; office hours include Tuesday 4:30-5:30; Wednesday 11:30-12:30; Thursday 9:45-10:45; appointments outside of these times are definitely possibly...please try to arrange ahead of time if possible.

TEXTS (in order of use):

The Big Thirst: The Secret Life and Turbulent Future of Water, Charles Fishman, 2011 or 2012, Free Press, NY, NY.

The Perfect Protein: the Fish Lover's Guide to Saving the Oceans and Feeding the World, Andy Sharpless & Suzannah Evans, 2013, Rodale Inc, NY, NY.*

Extracted: How the Quest for Mineral Wealth is Plundering the Planet, Ugo Bardi, 2013, Chelsea Green Publishing, White River Junction, VT, 299 pp.

[Other readings provided in Canvas or class made available through the semester.]

*Note: this book is not assigned with the intention that students be convinced they should eat fish!

Learning objectives for this course:

The course will benefit students by providing deep learning experiences through the use of an inquiry-based approach to science, best delivered in a laboratory-based natural science course. It will facilitate student learning of science content and the process of scientific discovery. Specific learning objectives include the following.

Students will...

- understand essential scientific principles and concepts
- understand the fundamentals of the scientific process (“scientific literacy”) and the value it can add to solving contemporary issues
- communicate about the natural world, the scientific practice and variables relevant to addressing issues about natural resources in a meaningful way
- begin to make informed and responsible conclusions and decisions through the critical study of data/evidence (quantitative literacy & scientific reasoning) regarding natural resources
- identify opportunities for professionals in other disciplines to help address issues considered

- develop an appreciation for the complexities of the broader context around contemporary issues.

The following learning objectives for all the academic programs that the Geological, Environmental and Marine Science Dept. offers will be addressed as well.

- Apply scientific and technical knowledge to specific tasks and problems.
- Cultivate specific scientific and technical skills...
- Develop increased capacity in the skills of independent learning, critical thinking, problem definition, and problem solving.
- Develop enhanced numerical skills and computer literacy as part of an undergraduate program designed to deliver current and relevant knowledge of the discipline.
- Communicate effectively ... through oral, written, and graphical means, and to participate effectively ... in individual and team-related activities.
- Understand the importance of ethics in the practice of the profession.

EVALUATION:

Students will be engaged in numerous learning activities integrated into “lectures.” Participation and work produced will be graded. Weekly quizzes will address the prior week’s readings, content and activity and will available online. The class projects work will span several weeks; work collected from activities done in class will be the equivalent of traditional “lab work.”

- 30% Project reports
- 10% Weekly reading quizzes
- 15% Science practices “3 Minute” video project
- 30% Tests
- 15% Participation (includes submitted class activities & participation during the activities)

READINGS & READING QUIZZES: Required reading assignments are provided in the Weekly Plan chart below and should be completed by the class meeting indicated. Readings will be accessible in the course Canvas site unless otherwise noted. Reading quizzes will be available at least one week before they are due unless technical difficulties occur; students will be notified ASAP when difficulties are discovered. If you have any trouble accessing online readings, contact me immediately.

2017 Weekly Plan

Please note: In any class meeting, we may go outside to do some of our work. Please plan to be able to do so; notice will be given via email message whenever possible!

Wk	Dates	SCI 100 Topics	Readings
1	9/7	Class Intro & Water Resources Intro https://www.ted.com/talks/paul_gilding_the_earth_is_full?language=en	Syllabus; and SP summary (in Canvas)
2	9/12 & 14	Water Resources http://www.newsweek.com/2015/05/01/world-will-soon-be-war-over-water-324328.html http://www.cbc.ca/news/world/rio-olympics-sewage-1.3704804	http://channel.nationalgeographic.com/breakthrough-series/videos/solving-the-water-problem/ BT 1-3 (Complete reading quiz by Tuesday class! Same for all text readings throughout semester)
3	9/19 & 21	Water Resources	BT 4-6
4	9/26 & 28	Water Resources Guest speaker timing to be determined	BT 7 & 8
5	10/3 & 5	Water Resources	BT 9-Afterword
6	10/10 & 12	Fisheries Cod: https://www.youtube.com/watch?v=L5wR8Iu2Q00 10/12: Test 1 on Water Resources topic	PP 1-3 and - http://www.fisheries.is/main-species/cartilaginous-fishes/ - http://seaworld.org/en/animal-info/animal-infobooks/bony-fish/physical-characteristics/
7	10/17 & 19	Fisheries Field trip (timing TBD) Water Resources Project Report Due by 11:59 p.m. 10/21	PP 4 & 5 and - http://eol.org/info/445 - http://eol.org/info/444
8	10/24 & 26	Fisheries Guest speaker timing to be determined	PP 6-8
9	10/31 & 11/2	Fisheries & Intro to Mineral Resources	PP 9-“Your Part”
10	11/7 & 9	!!!Vote on 11/7!!! Mineral Resources 11/9: Test 2 on Fisheries topic	Ex 1 & 2 and http://www.gemologyproject.com/wiki/index.php?title=Origins_of_minerals

11	11/14 & 16	Mineral Resources Sterling Hill Mine Trip (11/17; depart at 11:35) Fisheries project due by 11:59 p.m. 11/19	Ex 3 & 4 and http://www.gemologyproject.com/wiki/index.php?title=Origins_of_minerals
12	11/21 & 23	Mineral Resources 11/23 Turkey day!	Ex 5 & 6 and http://www.tulane.edu/~sanelson/eens1110/minresources.htm
13	11/28 & 30	Mineral Resources	Ex 7
13b	12/5 & 7	Mineral Project completion 12/7: Test 3 on Mineral Resources topic	TBD
	12/19* Final: time will be used	12/12: Mineral Project due 3 mins by 11:59 p.m. 12/12 Video Presentations on 12/19, 9-11 AM 12/19: <u>Everything</u> due (revisions, late submissions, videos); submissions earlier will be gladly received. *Alternate date is 12/12, 9-11 a.m.: if preferred/possible for all.	

“SP” = Science Practices resources provided in class and available on the Canvas site, Module 1.

“PP”= *The Perfect Protein*

“Ex”= *Extracted: How the Quest for Mineral Wealth is Plundering the Planet*

“BT”= *The Big Thirst: The Secret Life and Turbulent Future of Water*

COURSE POLICIES

Communication during the semester: The course Canvas site and email messages will be used for communications with students, provide new documents, and post grades when they are ready. Please pay attention to your Rider email account and visit the Canvas site regularly. Students looking to contact me via email should anticipate that while I check email regularly, I do have other frequent commitments that prohibit me from being online continuously. Expect a reply ASAPossible. Please don't plan on replies to messages sent after 10pm any weekday until the following morning, although exceptions may be made on occasion (e.g. night before tests); weekends may be.

Attendance to class is mandatory. If you must miss a class, arrive late or leave early, do your best to speak with, or at least inform the instructor beforehand if possible. Some of the work you will be doing will be dependent upon the number of students present thus it is important plan for fewer students attending than normal. If you miss class for legitimate reasons, contact me to work out a plan for you to make up work missed but know that in some instances, there may be a limit to how much assistance can be provided with work intended for groups, not individuals. *It is your responsibility to contact the instructor to work out a plan for any classes/work you miss. It is highly recommended that you do not miss class if you can help it, and be responsible and proactive when/if you do!*

Participation in class will be expected. Please come to every class meeting ready to work hard

and *THINK HARD* for the entire meeting time. Typically all students have very challenging schedules that at times leave them tired and/or distracted. But you do need to focus and work and think hard in every class! Groups will normally be set up by the instructor who may on occasion make adjustments to group membership as work unfolds.

The **withdrawal policy** of the School of Liberal Arts and Sciences will be followed: after the 11th week of the semester, dropping the course will not be approved except for medical reasons certified by the College.

Academic Integrity: For any work you produce in this class (individual or group work), you are expected to acknowledge the sources of your information when it does not come from you directly. Details will be discussed in class, but the course policy is the same as that of the university:

“Academic dishonesty includes any unauthorized collaboration or misrepresentation in the submission of academic work. In all written work, whether in class or out of class, the student’s name on the work is considered to be a statement that the work is his or hers alone, except as otherwise indicated. Students are expected to provide proper citations for the statements and ideas of others whether submitted word for word or paraphrased. Failure to provide proper citations will be considered plagiarism and offenders will be subject to the charge of plagiarism specified in the statement of regulations.

Similarly, students are expected to adhere to all regulations pertaining to examination conduct. These regulations are designed to insure that the work submitted by the student on examinations is an honest representation of that student’s effort and that it does not involve unauthorized collaboration, unauthorized use of notes during the exam, or unauthorized access to prior information about the examination.” (*The Source, Rider University*)

Student “cheating” is indeed an uncommon occurrence but it is important that all students understand expectations in this course: **Any form of cheating in this class is completely unacceptable, will not be tolerated, and will be dealt with appropriately according to the policy cited above and the significance of the work and infraction committed.** The university urges all instructors to report any instances of cheating/plagiarism or other dishonorable behavior so that it is recorded in a student’s file.

Acquiring work from an online source &/or another person and submitting it for your own work is a form of plagiarism and a serious offense. You must cite all your sources appropriately. If you are uncertain how to do so, please check in with the instructor.

[Submitting cited work for an assignment that is expected to be your own work, while not plagiarism, will not be acceptable.] Posting your work from this course online &/or sharing it with other students with the intent that they will submit it to an instructor as if it were their own work is also a serious offense.

Phone use: During some classes, you may be asked to use your cell phone to participate in activities. At all other times, please refrain from use of your phone for any purpose. If you need to respond to something urgent, please leave the room to do so. If you need to monitor your phone for an urgent reason, please inform/remind the instructor. During exams and quizzes, use of a phone in any way is absolutely not permitted.

ADA: If you have a disability and believe you will need academic accommodations in this course, please make an appointment for an Intake Interview with Services for Students with Disabilities in the Vona Academic Annex, Room 8, (609) 895-5492, serv4dstu@rider.edu. They will ask for documentation of your disability to support your accommodation requests and to recommend services as appropriate to your individual situation.

Adjustments to topics and/or work required: As the semester progresses, adjustments may be made to the specifics provided in the weekly plan above. Advance notice or adjustments in deadlines will be made for any work required of you (e.g. cancel week's assignments if a hurricane leaves some or all of us without power for a week). The intent of the adjustments will be to ensure that you have at least the same amount of time to complete the work that you would for any other week's work (e.g. at least one week) and to ensure the workload is reasonable and similar to previously planned work.

GRADED WORK

Class activities/lab work/participation (15%): During most class meetings, students will engage in one or more activities. Work from some of these activities will be periodically collected and evaluated. While you will work in groups for many of these exercises, each individual student will be expected to compose their own responses to questions/instructions. Additionally, students' active engagement in classwork will be evaluated. Please come to class ready to actively participate and work collaboratively and professionally with other students.

Project Reports (30%): The projects addressing each of the three natural resources topics we will address will be evaluated using criteria and outlines supplied to students prior to report completion. Deadlines are noted in the syllabus. Students will have opportunities to revise reports to improve their work; deadlines will be established on a case by case basis. Brief presentations of conclusions may be asked of each student.

Weekly reading quizzes (10%): The quizzes are used for fairly obvious reasons. You will be expected to come to class with background information needed to complete exercises during class and/or follow along for any lecturing provided. Nearly all quizzes will be offered through the Canvas course site and should be completed during the week assigned (or before). Quizzes will focus on your comprehension of some of the main ideas of the readings.

Science practices "3 Minute" video project (15%): In our first class, students will be introduced to some of the practices that scientists use to "do" science. During a variety of activities through the semester, students will continue to practice the practices. By the end of the semester, students are expected to produce a video sequence of themselves performing each of the practices as best they can and a written analysis of their performance. "10 second" will be explained in class. Each student will present their video towards the end of the semester; exact timing will be determined by students. Strategies to produce the video sequence will be discussed early in the semester and students will develop a grading scale for

this assignment by mid-semester. Students are encouraged to partner with a colleague in the class to help them record their “practices” and do so often. Students will need to find ways to video-capture their performance of the science practices without disrupting work in classes. Each student will present their video and a few comments about the project to the entire class at the end of the semester.

Tests (30%): Tests will include multiple choice questions and problems. Expect every test to include one or more questions requiring data analysis. Test 2 and 3 will include questions that ask students to connect content for the tests to appropriate content addressed earlier in the semester so expect these 2 tests to be partly cumulative. We will talk about relevant connections to earlier material as new content is addressed. Class time will likely not be used for test reviews. To provide additional support for your test preparations, approximately 2 weeks before the dates of each exam, we will set up “review” times during which students’ questions can be answered. Students who have attended these sessions with questions have typically found the sessions beneficial. Tests will also include questions that draw from the readings.