BIO 2950: Introduction to Environmental Biology
Fall 2012
TR, 10-11:30 AM
Rebstock 215

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Tutoring and questions
TA office hours are available upon request. To request assistance or tutoring from any TA at any time, email bio2950@biology.wustl.edu and one of the TAs will respond to you. You can use the Natural Sciences Learning Center (NSLC) for tutoring or study groups. Brian Daniels will hold meetings about your group project drafts in the NSLC and will hold a review session before each exam.

Course description
Introduction to Environmental Biology is designed to teach important principles of environmental biology and improve your general science literacy skills. The science literacy skills you will master in this course will help you address the issues you face in your everyday life regarding scientific and pseudoscientific claims about the environment and society. These skills will form the foundation for your development as a critical consumer of science information in the media. We will cover the foundational principles and contemporary issues within four main topics: energy and carbon cycling, human population growth, biodiversity, and sustainable food production. We will focus on the biological principles involved as we examine these topics in the context of some contentious and confusing issues related to environmental biology in everyday life.

Required course materials

1. iClicker: Rent or buy an iClicker (original version) from the university bookstore or buy one from an online retailer or direct from iClicker (http://www.iclicker.com/purchase). To register your iClicker go to iclicker.com and click on “Register your clicker” in the bottom left.

Course website
The course website will be on Blackboard, which can be accessed at bb.wustl.edu using your WUSTL key. The Blackboard site will contain important course information, assignments, reading material, class meeting slides, an online grade book, and communication forums. I will update the website regularly and will use it as the main way of making announcements. You will use it to take short homework quizzes and submit assignments. Slides from class meetings will be posted on the site but be aware that they cannot replace the discussions and activities that take place during class meetings. You are responsible for checking the course website on a regular basis (I recommend setting the option to receive an email when I post announcements).
Specific learning objectives
At the end of this course, you will be able to:

- Apply the basic scientific principles in environmental biology to real-world situations like whether or not to support biofuel initiatives, how to best preserve biodiversity, and how to feed the world without destroying the environment.
- Identify and evaluate valid sources of scientific information. Discern and analyze that information to make everyday decisions.
- Model the process whereby researchers test a scientific claim, including composing a valid scientific argument.
- Integrate ideas and communicate your understanding about biology with others in a format which: is adapted to particular circumstances and audiences; addresses issues in the context of the larger community and environment; and allows you to apply societal ethics to scientific inquiry and findings.
- Learn about yourself and learn to work effectively with others in a group and develop and cultivate an interest in current science issues.

Teaching and learning method
In this course, all the content is taught in the context of some contentious and confusing issues related to environmental biology in everyday life. In today’s knowledge economy you need to be able to think critically and work collaboratively to solve problems (these goals are also part of the university mission). Now that the Internet puts the world at your fingertips, you don’t need to memorize facts. Instead, you need to practice applying and using facts to make decisions. Just like in science, the issues you will address are too overwhelming for one person to gather all the resources needed to make a decision. In this class, as in science, you will work together with your peers to produce a product. You will form permanent groups of 4-5 students with whom you will work on four group exams and two group projects. Collaborative learning can facilitate deep learning and foster communication and problem-solving skills that will serve you in future coursework and careers. Each of you can contribute different skills that complement each other in the process of articulating your reasoning and creating your group projects.

Course content
You will learn content in this course through pre-class and in-class activities:

- Pre-class activities
  - Content mastery readings
    Most basic content can be easily mastered through reading a comprehensive textbook about the environment (Environment by Withgott and Brennan is one example). To introduce other content, I will assign regular readings on Blackboard. The reading is meant to help you master some basic content before coming to class so that we can use class time to dive into some topics more deeply and apply the content to real-world problems.
  - Online homework quizzes
    There will be short online quizzes on assigned reading or homework tasks before most classes. They will be designed to check your understanding of basic content before coming to class so that we can use class time to more deeply explore and practice applying the content to real world examples. Often we read or do homework assignments, but we don’t really remember what the main concepts. It helps if you are given specific cues that highlight exactly what you really need to focus on, which I will do with a few multiple choice and short answer questions. An additional benefit of short homework quizzes is that research shows that frequent quizzing is one of the best ways to improve retention and performance on exams. You will have two to three days to take quizzes and you can take each one up to three times each (the last one will be scored). Quizzes are worth just a few points each and must be completed by 9 AM before class to earn credit (class starts at 10:10 AM).
In-class activities

- **Content application lectures**
  Class meetings will include lecture, group activities, and clicker questions. I expect you to attend class and take notes on paper or with your computer. I will provide paper or electronic copies of slides during class. You may use your computer to take notes during lecture, but activities such as using Facebook, shopping online, or playing games are very distracting to other students. If I find you using your computer in a way that distracts me or other students I will ask you not to bring your computer to class. Turn your cell phones to mute and refrain from texting during class. Class time is too valuable to waste.

- **Problem-solving activities**
  We will work on group activities during class. These are designed to help you practice some of the skills you will need to complete your exams and group projects. Occasionally I will ask you to bring a short assignment to class with you to work on with your group during class.

- **Class participation**
  I will periodically ask clicker questions during most class meetings. Questions may be designed to give me more information about what to teach, check your understanding, poll the class for opinions, or prompt discussion. Questions will be graded for participation rather than whether your answer is correct or incorrect. To earn maximum participation credit you need to have credit for at least 80% of the questions. This allows you some wiggle room for class absences, forgetting your clicker, or dead batteries. Note: You may only submit answers with your personal clicker. If you are found submitting answers with multiple clickers, the owner of each clicker will receive a zero for this portion of the grade.

- **Exams**
  My goal in teaching this course is to get you to learn the basics of environmental biology that I think you will need for your lives. I use exams to induce you to study and thus learn more about biology. I also want to use exams as an opportunity for deeper learning. I can use exams to investigate how well you have mastered the material and to help determine what grade you should earn. Unfortunately, students don’t often know they are confused about a topic until after seeing a relevant exam question. Thus their grade suffers and they feel like they have not mastered the material. That is why we will be having group exams. For each of the four exams given during the semester, you will take the exam individually and then be given the opportunity to retake the same exam with your permanent group members. That way, if you didn’t understand a question on the exam, you have an opportunity for immediate clarification through discussion with members of your group. Your exam grade will be determined by your individual and your group grades. The instant feedback from your peers will not only improve your grade, but it will help you learn the material better. The four non-cumulative exams will be on: **September 27th, October 25th, November 15th, and December 18th.**

**Assessment**
The grade you earn in this course will be based on the following component parts:

- **10%** **Class participation:** Answering at least 80% of clicker questions for the semester will earn full credit for this portion of the grade. Answering fewer than 80% of clicker questions will earn the corresponding proportion of the points in this section. Submitting answers with multiple clickers (more than just your own) results in earning zero credit class participation for all parties involved.

- **10%** **Online homework quizzes:** There will be regular, short homework quizzes before almost every regular class period. Quizzes will be conducted within Blackboard. You can take each quiz up to three times, which gives you a chance to make sure you understand the material and allows for any technology mishaps. I will not reset quiz attempts in Blackboard (letting a quiz time out or closing your browser...
will use up one attempt). Your final quiz attempt will be scored. Quizzes are worth just a few points each and are due by 9 AM before class to earn credit (class starts at 10:10). You can take quizzes after the deadline for practice but they will not count for credit.

40%  **Group projects:** You will work with your permanent group to complete two group projects throughout the semester. All groups will complete the first project on the same topic. For the second project, your group will sign up for a topic of choice. Your group grade for each project is determined by your rough draft group grade (10%) and your final draft group grade (90%). Your final individual grade for this component of the course will be the average of your two group grades multiplied by your mean group contribution score as determined by the other members of your group using CATME peer evaluations.

40%  **Exams:** There will be four exams and your lowest score will be dropped (there are no makeup exams; the drop allows for emergencies or unexcused absences). Your score for each exam is determined by your individual exam score (75%) and your group exam score (25%).

The following scale will be used to assign grades (if you are taking this course Credit/No Credit, you must receive a C- or better to receive Credit):

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score</th>
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<tbody>
<tr>
<td>A+</td>
<td>97</td>
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<tr>
<td>A</td>
<td>93-96</td>
</tr>
<tr>
<td>A-</td>
<td>90-92</td>
</tr>
<tr>
<td>B+</td>
<td>87-89%</td>
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<tr>
<td>B</td>
<td>83-86%</td>
</tr>
<tr>
<td>B-</td>
<td>80-82%</td>
</tr>
<tr>
<td>C+</td>
<td>77-79%</td>
</tr>
<tr>
<td>C</td>
<td>73-76%</td>
</tr>
<tr>
<td>C-</td>
<td>70-72%</td>
</tr>
<tr>
<td>D+</td>
<td>67-69%</td>
</tr>
<tr>
<td>D</td>
<td>63-66%</td>
</tr>
<tr>
<td>D-</td>
<td>60-62%</td>
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<tr>
<td>F</td>
<td>0-59%</td>
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</tbody>
</table>

**Academic integrity**

The academic integrity policy of Washington University in St. Louis states: "Effective learning, teaching and research all depend upon the ability of members of the academic community to trust one another and to trust the integrity of work that is submitted in classes for academic credit or conducted in the wider arena of scholarly research. When such an atmosphere of mutual trust exists, the free exchange of ideas is fostered, and all members of the community are able to work to achieve their highest potential. In all academic work, it is important that the ideas and contributions of others be appropriately acknowledged, and that work that is presented as original is in fact original. Ensuring the honesty and fairness of the intellectual environment at Washington University is a responsibility that is shared by faculty, students, and administrative staff."

The complete policy and procedures are available at: [http://studentconduct.wustl.edu/integrity/policy](http://studentconduct.wustl.edu/integrity/policy). As a student at Washington University, it is your responsibility to become familiar with, understand, and abide by the standards outlined in this policy before performing any academic work. Ignorance of these policies is not a defense in cases of infringement.

Any person found using unauthorized assistance (including plagiarism, submitting work for more than one class without obtaining permission from all instructors, copying answers from another student during an individual exam, sharing clickers, or turning in group work to which you did not contribute) will be forwarded to the Committee for Student Academic Integrity. Students found guilty by the Committee will be given a grade of F for the course and be referred to the Dean for further action.

**Attendance policy**

I expect you to attend and actively participate in all class meetings. You are responsible for all material covered in class whether or not you attend. You can earn points for participation by answering clicker questions. You only need to answer 80% of clicker questions to receive maximum participation credit, which allows you wiggle room for missing occasional classes, illnesses, emergencies, forgetting your clicker, or dead batteries. I will not consider any excused/unexcused absence issues or technology issues with clickers. If you think your clicker is not operating correctly (and you have already replaced the batteries) contact iClicker or visit the university bookstore (1 year warranty from iClicker).
Regrading policy
Every attempt will be made to grade fairly, consistently, and accurately. For regular, in-class exams, if you disagree with the way your answer on your individual exam was graded, you may submit a written request for a regrade within 72 hours of receipt of your graded exam. To submit a regrade request, follow the instructions posted on Blackboard. If you submit an exam question for regrading, I reserve the right to regrade the entire exam, after which your regraded score will be used in calculations for your final individual grade. Submit your written request to my office by the deadline.

Help is available!

Academic resources

Disability resources
Students who are seeking disability information or support should contact Disability Resources (DRC) at 935-5970 and access information at (http://www.cornerstone.wustl.edu/). If you require special accommodations for exams or other course activities, please contact me as soon as possible so that I can arrange for accommodations for you for all in-class activities and exams.

Contacting me
I want everyone to have a meaningful learning experience and do well in this course. The only way for me to know if you are struggling is for you to communicate with me. Please feel free to email, call me, or to stop by my office hours. I work hard to respond to student concerns and emails but I am not available at all hours of the day and night: allow 48 hours for email responses and do not wait until the last minute (after 5 PM or a weekend) as I will not be able to help you. (As a gentle reminder, please strive to use proper email etiquette. For example, use clear subject lines, use a salutation to open your email, and sign off with your full name, rather than starting out with “Hey” or similarly informal openings and textspeak.)

Technology
I will not consider technology excuses in this course. There are computer labs in Olin Library, the NSLC, and other campus locations. Make sure you back up your work to avoid losing data or work if your computer crashes. It is your responsibility to make sure you have access to Blackboard. You can access Blackboard help by clicking “Help” at bb.wustl.edu, or by going to http://onemand.blackboard.com/students.htm or by contacting WU Student Technology Services (http://sts.wustl.edu/).

Late work
You will have adequate time to complete all of assignments. If you wait until the last minute (<3 hours before something is due or after 5 PM) I will not be able to help you. You will have three chances to complete all online homework quizzes, which allows for technology mishaps; I will not reset any quizzes in Blackboard. You have control over your schedule and one of the important skills you need to develop is how to organize and manage your time.

Group issues
A large part of the grade you earn in this course will come from participation in group projects. I believe that this will help you master the material as well as help you develop communication, technology, and collaboration skills, such as dividing tasks and providing and accepting peer feedback, that you will need in college and your eventual profession. You will work in groups of 4-5 all semester during class and on group projects on topics of
your choosing. To make this process work, every member of the group needs to come prepared to share knowledge, solve problems, and work equally.

**Peer evaluation** To ensure equitable group participation and positive group interdependence, your exam grades will be weighted more heavily by your individual score and the individual grade you earn for the group project component of the class will include a peer evaluation component. We will use an anonymous online tool (CATME) to conduct peer evaluations. You will have the opportunity to anonymously rate your group members after the first exam and group project, which gives everyone a chance to improve. You will also anonymously evaluate all the other members at the end of the course. The peer evaluations will be used to determine each student’s final grade for the group project component of the course. For example, if your group earns 85% and 95% on your two projects, the group grade is an average of 90%, which will then be modified by your peer evaluation score (e.g. if you earn a 90% from your group members, your individual project grade is 90% of 90%). I reserve the right to overrule the peer evaluation score if it appears that there will be a miscarriage of justice.

**Donald Trump Clause** When you work on a group project, it is inevitable that some team members will contribute more than others. I expect you to work together to collaboratively solve problems, but I am available should you need periodic outside help to navigate and improve your group dynamics. However, it can become a critical problem if, over time, one person demonstrates a consistent lack of commitment to the team (i.e., failing to attend meetings, not completing his or her portion of the group task, or submitting unacceptable work on behalf of the group). In such an instance, I reserve the right to "fire" that member. Firing involves a two step process: (1) The team (in consultation with the instructor) gives the wayward member a warning which includes the wayward teammate negotiating with the group how he or she is going to be a better teammate. (2) If the member continues to behave inappropriately, that individual will be fired from the group by the instructor. If your membership within the group is terminated, you forfeit all team benefits associated with completing the project as a group. You will complete individual assignments and exams from the point of termination to the end of the semester. Bad teammates usually show their tendencies early, so let a problematic group member know her/his behavior is not acceptable early.

### Schedule of topics and due dates

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<thead>
<tr>
<th>Sunday</th>
<th>Tuesday</th>
<th>Thursday</th>
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<tbody>
<tr>
<td>Sep 2</td>
<td>Aug 28 Into</td>
<td>Aug 30 Sci/quant lit</td>
</tr>
<tr>
<td>Sep 9</td>
<td>Sep 4 Sci/quant lit</td>
<td>Sep 6 Sci/quant lit</td>
</tr>
<tr>
<td>Sep 16 Climate change draft</td>
<td>Sep 11 Sci/quant lit</td>
<td>Sep 13 Carbon/energy</td>
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<tr>
<td>Sep 24  Climate change final</td>
<td>Sep 18 Carbon/energy</td>
<td>Sep 20 Carbon/energy</td>
</tr>
<tr>
<td>Sep 30 Climate change final</td>
<td>Sep 25 Carbon/energy</td>
<td>Sep 27 EXAM 1</td>
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<tr>
<td>Oct 7</td>
<td>Oct 2 Carbon/energy</td>
<td>Oct 4 Human population growth</td>
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<tr>
<td>Oct 21  Biodiversity draft</td>
<td>Oct 16 Human population growth</td>
<td>Oct 18 Human population growth</td>
</tr>
<tr>
<td>Nov 4 Biodiversity draft</td>
<td>Oct 30 Biodiv/conservation</td>
<td>Nov 1 Biodiv/conservation</td>
</tr>
<tr>
<td>Nov 11 Biodiv final/food draft</td>
<td>Nov 6 Biodiv/conservation</td>
<td>Nov 8 Biodiv/conservation</td>
</tr>
<tr>
<td>Nov 18 Sustainable food</td>
<td>Nov 13 Biodiv/conservation</td>
<td>Nov 15 EXAM 3</td>
</tr>
<tr>
<td>Nov 25</td>
<td>Nov 20 Sustainable food</td>
<td>Nov 22 Thanksgiving</td>
</tr>
<tr>
<td>Dec 2</td>
<td>Nov 27 Sustainable food</td>
<td>Nov 29 Sustainable food</td>
</tr>
<tr>
<td>Dec 9 Food final</td>
<td>Dec 4 Sustainable food</td>
<td>Dec 6 Sustainable food</td>
</tr>
<tr>
<td>Dec 16</td>
<td>Dec 11 Reading day</td>
<td>Dec 13 First day final exams</td>
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<tr>
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<td>Dec 18 Exam 4 (1-3 PM)</td>
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*Details of this syllabus are subject to change. Updates will be announced on Blackboard*