FOREST ECOLOGY
FNRM 5104, 4 credits, Fall 2015
Prerequisites: BIOL 1001 or 1009
cross-list with FNRM 3104

Ecology, the study of the interactions of organisms and their environment, forms the essential foundation of the management and conservation of the world's ecosystems. This course examines basic ecological principles through the lens of forest ecosystems, exploring the theory and practice of ecology at various levels of organization from individuals to populations, communities and ecosystems. At each level we examine past and current theoretical advances and use case studies to evaluate the impacts of increasing human domination of global systems on forested ecosystems.

M and W 11:45-1:00 PM, BioSci 64

Friday lab, 12:50-4:50 PM, Green Hall 110 or St. Paul Gym parking lot

Instructor: Rebecca Montgomery
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Email: rebeccam@umn.edu
Preferred method of contact: email
Office hours: T 10:00-12:00, TH 1:00-3:00

TA: Karen Rice
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Preferred method of contact: email
Office hours: M 1:00-2:00, F 10:45-12:30

Course learning goals

Student Learning Goals
Learning is not a passive activity in which you simply absorb and repeat back facts given by an instructor. Rather, learning requires you to take an active role. In fact, to truly understand science you must construct your own personal interpretation of the concepts and store them away in a form that is meaningful to you.

As a teaching staff, we are here to help you and to facilitate your learning of forest ecology in an active way, but ultimately you bear the responsibility for understanding the material and making it your own. We are not here to "just lecture" but to actively involve you in the learning process.

1 Modified from syllabi and resources of Dr. Diane Ebert-May, MSU, Plant Biology
During class time we will all be involved in working towards the common goal of learning ecological concepts. Although facts and vocabulary are important to any discipline, we ask you to go beyond simple memorization of details and to interconnect those facts to concepts, applications and problems; to ask meaningful questions; to develop a range of intellectual abilities, including critical thinking, logical argument, appropriate uses of evidence and interpretation of varied kinds of information; and communication of your understanding in writing and orally.

At the end of this course you will:

- possess a basic body of ecological knowledge relevant to apply to problem-solving and/or the skills to seek additional knowledge
- be able to assess what is ecologically important and relevant to solve a problem
- be able to apply ecological knowledge to real-world problems, recognizing the complexity and interconnections important to ecological systems
- recognize that ecology is foundational to management and be able to communicate why to others
- understand and communicate to others the nature and process of science – especially the role of uncertainty and new/changing knowledge base

As you begin the course and throughout, think about your personal goals for FNRM 3104.

- What do you want to know and be able to do by the end of this course?
- Do you feel prepared to achieve these goals?
- How will you attempt to achieve these goals?

Faculty Goals

- As facilitators, we will encourage and create a learning environment in which all students are actively engaged in the process of scientific thought and reasoning.
- We will guide your development toward higher-order thinking and reasoning skills so you can successfully explore and demonstrate achievement of each of the goals above.

Achieving Course Learning Goals

To achieve these goals we will ask you:

- to do readings and/or online learning modules in advance of class meetings
- to actively participate in class meetings and labs
- to participate in cooperative group work during class meetings, for assigned homework, and for independent projects
- to reflect on and evaluate your own understanding.
Online learning

This course uses Moodle as a course management tool called Moodle. To access our course visit the main U of M Moodle site:

https://ay15.moodle.umn.edu/

From this page you will see courses you are enrolled in as well as learning sites for getting to know Moodle. At this site you will find online learning modules, readings, slides & summaries of activities for each class meeting, supplemental information about topics covered in class meetings, answers to quizzes, examples of student work, and results of periodic course assessments. **You are expected to read this material and are responsible for the information presented.**

Evaluation and grade guidelines

<table>
<thead>
<tr>
<th>Component</th>
<th>% of grade</th>
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<tbody>
<tr>
<td>Online quizzes, daily in-class and take home assignments*</td>
<td>20%</td>
</tr>
<tr>
<td>Research paper (8-10 pp.)</td>
<td>20%</td>
</tr>
<tr>
<td>Midterm exams</td>
<td>3 @ 10% each = 30%</td>
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<tr>
<td>Final essay</td>
<td>5%</td>
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<tr>
<td>Teaching assignment - lab/lecture activity development</td>
<td>10%</td>
</tr>
<tr>
<td>Lab exercises and assignments</td>
<td>5% weekly assignments; 10% final presentations</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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* Assignments include the following types of assessment as either cooperative group or individual work that may occur in-class or out of class:
  - reflective writing on readings
  - minute papers
response papers to current literature and media coverage of ecology
scientific interpretation, analysis and problem solving

Grading

The course will be graded from A through F (with pluses and minuses). All exams, written
assignments, participation, and presentations will be given a numerical grade and multiplied by
their respective contribution as a percent of the calculated final grade.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Numerical Grade</th>
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<tbody>
<tr>
<td>A</td>
<td>≥ 93</td>
</tr>
<tr>
<td>A-</td>
<td>90</td>
</tr>
<tr>
<td>B+</td>
<td>87</td>
</tr>
<tr>
<td>B</td>
<td>83</td>
</tr>
<tr>
<td>B-</td>
<td>80</td>
</tr>
<tr>
<td>C+</td>
<td>77</td>
</tr>
<tr>
<td>C</td>
<td>73</td>
</tr>
<tr>
<td>C-</td>
<td>70</td>
</tr>
<tr>
<td>D+</td>
<td>67</td>
</tr>
<tr>
<td>D</td>
<td>60</td>
</tr>
<tr>
<td>F</td>
<td>&lt;60</td>
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A = Outstanding achievement that demonstrates superior mastery of the material and exemplary
performance. The distinction between A and B will depend on the student’s ability to understand
and articulate explicit and implicit concepts.

B = Achievement that significantly exceeds the level necessary to meet the course requirements.

C = Achievement that meets all course requirements at an average level.

D = Achievement worthy of credit, but which does not fully meet the course requirements.

F = Failure to complete the course requirements, not worthy of credit without pre-arranged
agreement between the student and the instructor regarding a grade of incomplete.

Required materials

Elan spiral field book field notebook can be purchased at the bookstore (ITEM #E64-8x4W) or
Rite-in-the-Rain can be purchased from teaching staff ($7.00).

Other details

Field Trips

The course includes an optional weekend field trip. The cost is 40$ to partially cover food,
lodging and transportation. Please sign up by the end of the first week.

Biomes of Minnesota departs 8:30AM Saturday, September 26th and returns 6:00PM
Sunday, September 27th. On this trip, we will visit a series of forest habitats between Saint
Paul and Crosby-Manitou State Park on the north shore of Lake Superior. We will visit oak
savanna, black spruce bog, cedar swamp, pine forest, northern hardwood forest & spruce-fir
forest. We will stay overnight at the Cloquet Forestry Center. Observations from this field
trip will be used to construct a report that evaluates the past, present and future of
Minnesota’s forest ecosystems.

Forest Ecology lab

Labs include afternoon field trips to local natural areas, a restoration project, and a semester-long
experiment. Lab sessions are designed to complement and reinforce material covered in regular
class periods. They offer hands-on and in-depth coverage of course material in a one-on-one environment with the instructors. You will work in groups during lab; each group will be assigned a lab project to present at a symposium and in a poster session during the last lab period. You will keep a blog as part of your lab experience that you will update after each lab.

Cooperative groups
Many of the in class activities and exercises will be undertaken in groups. You will be assigned to a group of 4-5 students in the first week of class. If individual concerns or issues develop within groups, please come speak to me so that I can help resolve it. I expect everyone to participate equally on group work. The responsibility of presenting group work will rotate evenly among all members of the group each week. Work done in class is submitted as a group. All students will sign their names to the work, to signify that they have contributed to final product.

Reading assignments
Readings will come from various sources, including textbooks, journals, agencies and newspapers. Some are already listed, and others (TBA) will be assigned the week before they are due. I will assume you are familiar with all readings when I lecture and when you are tested. Assigned readings will be posted as Adobe Acrobat .pdf files on the course site. I will sometimes ask that you print the articles to have in-hand for class discussion, but will otherwise let you decide whether you want to print the articles or just read them online.

In-class exercises
These exercises will be hands-on activities or problem sets that you will work on in your work groups. In addition to participating in the activity, we will expect some final product at the end of the class, in the form of a written summary or oral presentation. These exercises will be graded. These exercises cannot be made up if you miss class unless prior arrangements are made.

Research Paper
As part of the development of your critical thinking skills and your ability to evaluate of current research, you will write a review paper on a topic of your choice. You are encouraged to choose a topic that is pertinent to your thesis interests so long as it represents an ecological topic.

Lab/Lecture development
Graduate students are required to develop a lab or lecture exercise as part of their requirements in this course. One of the best ways to learn is through teaching! This activity will allow graduate students to explore a topic of interest in more depth and to develop their skills as an educator. You are required to develop either an in-class exercise OR a lab exercise in forest ecology. The Teaching Issues and Experiments in Ecology (TIEE) program will be the model for the
development of these exercises. At the end of the semester students will submit their exercise in the format required for peer review by TIEE.

Due Dates
We provide due dates as guidelines to keep each of you on task. Deadlines are guidelines to ensure that you make good progress completing tasks and getting feedback that will help you improve, correct mistakes, and learn the material. Ultimately, it is your responsibility to get the work done. Assignments will be due on the date stated unless prior arrangements are made. Each student is allowed one late assignment, no questions asked, no points lost. Late assignments incur a 5% penalty up to one week after the due date and 10% penalty thereafter (unless it’s your freebie).

If you are handing something in late or ahead of schedule, please hand it directly to one of us or to someone in the main Dept. of Forest Resources office (115 Green Hall), so we can confirm the receipt.

Important Class and University Policies

Senate student academic workload policy
For undergraduate courses, one credit is defined as equivalent to an average of three hours of learning effort per week (over a full semester) necessary for an average student to achieve an average grade in the course. For example, this is a 4-cr course that meets for six hours a week. You should expect to spend an additional six hours a week on coursework outside the classroom.

Classroom conduct
This course is highly interactive. You are expected to treat each other and the instructors with respect. You are expected to listen to each other and address each other by name. The instructors will follow the same code of classroom conduct – respect, listen, and treat each person as an individual.

Student academic integrity and scholastic dishonesty
Academic integrity is essential to a positive teaching and learning environment. All students enrolled in University courses are expected to complete coursework responsibilities with fairness and honesty. Failure to do so by seeking unfair advantage over others or misrepresenting someone else’s work as your own, can result in disciplinary action. The University Student Conduct Code defines scholastic dishonesty as follows:

“Scholastic Dishonesty: submission of false records of academic achievement; cheating on assignments or examinations; plagiarizing; altering, forging, or misusing a University academic record; taking, acquiring, or using test materials without faculty permission; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement.”
Within this course, a student responsible for scholastic dishonesty can be assigned a penalty up to and including an "F" or "N" for the course. If you have any questions regarding the expectations for a specific assignment or exam, ask.

**Accommodations for students with disabilities**

The University of Minnesota is committed to providing equitable access to learning opportunities for all students. Disability Resource Center (DRC) is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations.

- If you have, or think you may have, a disability (e.g., mental health, attentional, learning, chronic health, sensory, or physical), please contact DRC at 612-626-1333 to arrange a confidential discussion regarding equitable access and reasonable accommodations.
- If you are registered with DRC and have a current letter requesting reasonable accommodations, we encourage you to contact your instructor early in the semester to review how the accommodations will be applied in the course.

Additional information is available on the DRC website: [https://diversity.umn.edu/disability/](https://diversity.umn.edu/disability/)

**Sexual harassment**

Sexual harassment by or toward a member of the University community is prohibited. "Sexual harassment" means unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature when: (1) submission to such conduct is made either explicitly or implicitly a term or condition of an individual’s employment or academic advancement in any University activity or program; (2) submission to or rejection of such conduct by an individual is used as the basis of employment or academic decisions affecting this individual in any University activity or program; or (3) such conduct has the purpose or effect of unreasonably interfering with an individual’s work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program.

**Mental health**

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce your ability to participate in daily activities. University of Minnesota services are available to assist you with addressing these and other concerns you may be experiencing. You can learn more about the broad range of confidential mental health services available on campus via [http://www.mentalhealth.umn.edu](http://www.mentalhealth.umn.edu)