

Fall 9-1-2005

EVST 360.01: Applied Ecology

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Purpose: Understanding the principles & concepts of ecology & how they inform real life decisions about human interactions with the environment. Will emphasize conservation of biodiversity and watersheds and design of field studies. **Prerequisites:** Chem 151, Bio 100, Math 241, EVST 201 (or similar courses)

References: EFB6 = Smith's Ecology & Field Biology 6th ed **OR** EOE = Smith's Elements of Ecology

OR M = Molles' Ecology (**OR** ANY good ecology text – just read appropriate sections)

AND N = E. Newman's Applied Ecology & Env. Management All on reserve in library

A collection of readings selected by the class will be available at the bookstore later in semester

On reserve: Cox General Ecology Lab Manual – read chapters 1-4 (and rest as needed for your project).

Brower et al. Field & Lab methods for General Ecology is also a useful reference.

Some items are on e-reserve and are accessible at eres.lib.umt.edu

Week Topic & references (you select your readings)

8/30 Course goals/mechanics. What is Applied Ecology? *EFB6 Ch 1; EOE part I; M Ch1; N Ch 1; Cox chs 1-4*

Ecological Literacy--Ecological concepts (& methods) that inform human decisions

9/1 **Ecosystem concepts** *EFB6 Ch (2,3,4),27 OR EOE part II & Part V OR M Ch 17-19*

to All life and economic activity depends on earth support systems (ecosystem services);

9-20 resources/services come from ecosystems & depend on their health/integrity/**condition**.

Support systems have limited **capacity** to supply goods/services & to assimilate change.

Natural **change** contributes to diversity but makes it hard to identify human-caused change.

Support systems are **connected**—our actions have unexpected, indirect effects.

Local populations/communities/ecosystems are linked in global systems

(parts \leftrightarrow whole); importance of incremental, cumulative effects

Energy flow & productivity *EFB6 ch 24 or EOE ch 23-24 OR M Ch17-18*

Material cycles (esp. water) *EFB6 ch 25-6; EOE ch 25-6 OR M Ch 19*

Env. fate of chemicals *Newman ch 9*

9/22 **Community concepts** *EFB6 Ch 20,21,23 (read about your studied community ch 28-30);*

or EOE ch15-17; & part IV & one biome from part VI OR M Ch 13-16 & 20

to Niche & Habitat—every species has a role (keystone, foundation, indicator, umbrella species)

10/11 Interactions/connections—competition, predation, cooperation/symbiosis, coevolution

Change – succession, disturbance, stability, resilience, flexibility, predictability, shifting baselines

Diversity—types & significance of diversity; Why and how to maintain biodiversity

*** **10/10 last day to drop or change grading 'easily'; last day to drop at all is last day of class *******

10/13 Organisms & their adaptations; *EFB6 Ch 5 (6-8 if relevant to your study), EOE ch; M Ch 4-6*

10/18 **Population concepts** *EFB6 see below; OR EOE Ch 11-14,18-19 OR M section III & Newman Ch 10*

to What are populations and species? *EFB6 ch 10 OR EOE Ch 11, OR M Ch 8*

11-3 change in quantity—rate/regulation of growth, carrying capacity, ecofootprint *EFB6 11,1, etc*

change in quality—evolution, genetic diversity, flexibility, pop. viability analysis *EFB6 19,18, etc*

11/8-12/6 **Applying Ecological Literacy in decision making for a sustainable society**

The science behind environmental policy – see Newman chapters(N) indicated below

Possible topics (reading will be assigned after class selects topics): Ecosystem Management vs CPR-- N 11

Watersheds --Clark Fork case study www.epa.gov/region8/superfund/sites/mt/milltowncfr/home.html

Toxicology and setting environmental & human health standards N9; Forests (Fire) N 7

Value of Nature – Ecological economics; Dailey/Costanza on e-reserve; www.esa.org/ecoservices/

Env. Impact Assessment & Risk Assessment Population Policy, carrying capacity, ecofootprint

Ecology of Food Production N 4 (also 3,5,6) Energy, Carbon and Climate N2, Smith ch 32, CO2 calc

Pest management N 8 Pollution management N 9 Conservation of Biodiversity N 10 & 11

12/8 wrap up/evaluations (& team presentations if time needed) 'drop dead' drop deadline

12/13 3:20-5:20pm FINAL SYMPOSIUM – each team presents its research

Grade based on percentage of 1000 points earned**HOW to earn points (maximum possible points shown):**

- 400 pts Take home essays (individual work!);
- 400 pts Team Research project: approved proposal (50pts), 3 progress reports (30pts); drafts & outlines & bibliographies (see below), paper 150 , presentation 100+
- 100 pts Field trips (approved meetings) & reports on same (10 pts/hr of trip & per ½ page) **reports due about one week after field trip/conference.**
See EVST calendar for times. Sign up sheets are on door at M-4 Rankin.
- 100 pts Participation in class & final symposium and maintaining portfolio of work

HOW to lose points: Unexcused absence from field trip once signed up – drop letter grade.

- Leaving mess in lab (cleanup after yourself, discard samples when done; recycle containers).
- Taking equipment without checking it out; taking equipment reserved by others.
- Returning equipment late; not reporting equipment problems/malfunctions.
- Not contributing to your team's work. At the end of the semester, all team members will evaluate the role of all team members in the group's effort. This will determine whether all members of the group will receive the same points for the group project.

Late work – Assignments lose half their value for each week late.

Note: Being late does not restart the clock for later assignments.

ASSIGNMENTS ARE DUE THE WEEK INDICATED BELOW;

SAVE a copy of all assignments & comments in a portfolio for check at end of

semester.

WEEK OF ASSIGNMENTS DUE—(& when returned)

- 9-1 Return SURVEY with your research interests (which project ideas appeal to you?). UM EMAILS due.
- 9-6 Form research teams; team leader EMAILs TEAM MEMBERS contact info to Watson.
- 9-13 PROPOSAL—question(s), target audience, anticipated product(s), design/methods, needed resources
- 9-20 proposals returned & discussed (keep resubmitting proposal until approved) TAKE HOME ESSAY 1
- 9-27 Revised/expanded PROPOSAL due (50 pts once approved)
CHRISTA GONE OCT 8-15 for Transboundary.
- 10-4 return revised proposals
- 10-11 PROGRESS REPORT 1 (10pts) — include names, accomplishments, problems, changes in plans
1st DRAFT of Intro/background/ LitRev (10pts), Approach/Methods (10pts) & Bibliography (10 pts)
- 10-18 Intro/Lit review/Approach and Bibliography returned with comments
- 10-25 PROGRESS REPORT 2 – any new info since earlier progress report (10pts);
Detailed OUTLINE of paper (20pts) at least 2 pages; include full citation of your paper,
all subheadings, 1 sentence/pgf: note any stats/graphs/figures to be used
- 11-1 Outline returned with comments; TAKE HOME ESSAY 2 due.
- 11-8 PR 3 (10pts); Revised OUTLINE (10pts) & MORE COMPLETE BIBLIOGRAPHY (10 pts)
- 11-15 outline and bibliography returned; sign up for presentations
- 11-22 1st DRAFT OF TEAM RESEARCH PAPER (double-spaced) 40 pts
- 11-29 draft paper returned; TAKE HOME ESSAY 3 due.
- 12-6 TAKE HOME ESSAY 4 (& bonus) due; (some student presentations if needed)
- 12-13 FINAL DRAFT OF TEAM PAPER due (single spaced, double space between paragraphs) -- 110 pts;
some student presentations; evaluations, possible portfolio check
- 12-13 (3:20-5:20pm) STUDENT PRESENTATION Symposium (note Undergrad Symposium in spring)

Note – All drafts (intro, approach sections, outlines, draft paper) should be double spaced.

Final versions, exams, biblios –single spaced within paragraphs & citations; double between.

Unfortunately, there is not time to rewrite & regrade assignments & exams.

Many of the assignments ARE revisions of the previous assignments.

The TA & I need at least one week to comment on assignments. Do not get behind or you will have to start skipping assignments since you won't get the previous one back in time to guide writing the next.

Graduate increment— graduate students serve as research team managers and report editors. They must approve all team reports before these are given to instructor. Some teams will not have graduate student members, and this will be taken into consideration when evaluating their work.

EVST 360 Frequently Asked Questions:

2005

Basic Class Etiquette

You should arrive before class starts and wait until class is over to depart. If you must arrive late, enter as quietly as possible. If you must leave early, let the instructor know in advance and leave as quietly as possible. Avoid scheduling conflicts that would cause late arrivals and early departures. When in class, participate in class activities and avoid disrupting class by talking during lectures. Class etiquette is especially important when guest speakers visit class. They are giving their time to you without pay; respect that.

What constitutes a Pass for P/NP option?

Earn 60 % of possible points.

Attendance policy:

Attendance is occasionally taken in lecture (especially when guest speakers appear). Regular attenders of lectures earn class participation points. Attendance is taken by having students answer a short question about the lecture. To receive full credit, answers should reflect that the student was present in mind as well as body.

Policy on making up exams: Exams are take home essays, so no make ups are needed. The final exam period will be devoted to student team presentations.

Policy on conferring on take home exams: Students may confer on take home exams, sharing ideas & ensuring that you all understand the questions. But you must write your own exam in your own words. Develop your own unique examples. Except for textbooks, you should use different sources. If two exams use the same examples, sources, arguments, etc – then you must cite which of you came up with those ideas—only one of you can get credit for the ideas. If you do not cite who came up with the ideas, then you are guilty of plagiarism which is grounds for failing.

Receiving an incomplete: To receive a grade of I or 'incomplete', student must request an incomplete and explain what unexpected emergency made it difficult or impossible for the student to complete course work by the due dates. Student must also agree to a date by which the work will be completed and turned in. Some late work penalties will still apply.

Late work: Assignments lose ½ of their value for each week late. Hence, work that is a 2 weeks late will receive no points. Extreme hardship cases may negotiate some reduction in late penalties but will likely have to request an Incomplete if a large number of assignments must be handed in late.

What is the late drop policy for this course?

According to the calendar on the back of UM's Autumn 2005 class schedule:

The last day to add or drop with a refund is Sept 19.

The last day to drop (or change grading system) without a refund and with only advisor & instructor signatures is Oct 10 (after that, the Dean's signature is required and fees are assessed). Acceptable reasons for late drops include – prolonged illness or family emergency.

The last day to drop is Dec 9 (last day of classes). After that, take your petition to God.

(this is known as the 'dropdead' drop deadline).

Expectations of Auditors -- Auditors must practice the same basic class etiquette as regular students. This is the only expectation of unofficial auditors. Official auditors must attend class regularly and answer the take home exam. Failure to meet these expectations, will result in a notation in the student's academic record indicating that attendance/participation was not satisfactory.