Fall 9-1-2000

EVST 360.01: Applied Ecology

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EVST 360 APPLIED ECOLOGY **Fall 2000**

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Kevin Colburn, M5 Rankin, 728-7892, wildblue@selway.umt.edu office hours _____

Purpose: Understanding the principles and concepts of ecology and how they inform real life decisions about human interaction with the environment. Will emphasize conservation of biodiversity and watersheds and design of field studies. **Prerequisites**: Chem 154, Bio 101, Math 241, EVST 201 (or similar courses)

Date **Topic & *references***

9/5 Course goals/mechanics. What is Applied Ecology? *Chs 1-2*
Ecological Literacy--Ecological concepts that inform human decisions

9/7 Organisms and their environment; adaptation *Ch 3 (4-9)*

9/12-21 Population concepts *Ch 17, 18 (19,20), 21 & EcoFootprint (chs 1 & 2)*
What are populations and species?
change in quantity—regulation, rate of growth, carrying capacity, ecofootprint
change in quality—evolution, genetic diversity, flexibility, population viability analysis

9/26-10/5 Community concepts *Ch 28 (22-27), 29,30*
Niche & Habitat—every species has a role; habitat analysis
Interactions—competition, predation, cooperation/symbiosis, coevolution
Diversity—types of diversity, significance of diversity
Role of change – succession, disturbance, stability, resilience, flexibility, predictability
Why and how to maintain biodiversity

10/10 ******EXAM 1**** 10/16 last day to drop or change grading system**

10/12-11/2 Ecosystem concepts *Ch 10-12, (13-16), ecosystem services on e-reserve*
All life and economic activity depends on earth support systems (ecosystem services);
resources/services come from ecosystems & depend on their health/integrity/**condition**.
Support systems are limited: sustainable yield, **capacity** to assimilate **change**.
Support systems are **connected**—unexpected, indirect effects of actions.
Local populations/communities/ecosystems are linked in global systems
(parts ←→whole); importance of incremental, cumulative effects
Energy flow & productivity
Material cycles (especially water) & environmental fate of chemicals

11/7 *******VOTE*******

11/9-12/12 **Applying Ecological Literacy in decision making for a sustainable society**
The science behind environmental policy – using case studies

Possible topics (reading will be placed on reserve after topics selected):
Ecosystem Management vs CPR--Watersheds (Clark Fork case study); Forests (Fire)
Toxicology and setting environmental & human health standards
Environmental Impact Assessment & Risk Assessment
The Value of Nature – Ecological economics
Ecology of Food Production
Pest managment, Pollution management
Population Policy, carrying capacity, ecofootprint
Energy, Carbon and Climate
Conservation of Biodiversity

12/12 ******Exam 2****
12/14 wrap up/evaluations or student presentations**
12/19 8-10 am FINAL SYMPOSIUM – each research team presents a paper (oral, poster, or web site)

Text: R. Smith Ecology & Field Biology; **e-reserve**: articles on subjects picked by class

GRADING: 2 exams @ 200 pts each; team research project/paper @ 400 pts, participation 200 pts
Participation includes class, field trips/events (some on Sat, some during week) & final symposium.

EVST 360 Applied Ecology FALL 2000 V. WATSON

Grade based on percentage of 1000 points earned

HOW to earn points (maximum possible points shown):

400 pts 2 Exams (200 each);
400 pts Research project: proposal 50, progress reports 100, paper 100 , presentation 50
100 pts Field trips or conferences & reports on same
100 pts Participation in lecture and at final symposium

HOW to lose points:

Unexcused absence from field trip once signed up – drop a letter grade for course.
Late work – lose ¼ of points on that assignment for each week late.
ASSIGNMENTS ARE DUE WEEK INDICATED BELOW;
Keep a copy of all assignments turned in.

WEEK OF	ASSIGNMENTS
9-5	Indicate areas of research interest
9-12	Email addresses due (notify us if change); form research teams; email names to Watson.
9-19	1st draft of Proposal (prospectus)
9-26	Proposals returned and discussed
10-3	Revised (more detailed) Proposals or progress report (achievements, problems,changes)
10-10	EXAM this week -- nothing due
10-17	progress report—achievements, problems, changes, skeletal outline & bibliography
10-24	exam challenges due; outline and bibliography returned with comments
10-31	progress report –achievements, problems, changes, more detailed outline & bibliography
11-7	VOTE -- outline and biblio returned
11-14	progress report –achievements, problems, changes, very detailed outline & bibliography
11-21	outline and biblio returned; state form of presentation (oral, poster, web page)
11-28	1st draft of team research paper
12-5	draft returned
12-12	Exam – nothing due
12-14	Final draft of research paper due (some student presentations)
12-19 (8-10 am)	Student presentations at Final Symposium

Graduate increment for 360 – graduate students will serve as leaders of research teams. They must approve all team proposals, reports, papers, etc before these are given to instructor. Above assignments are due to the grad student team leader on Tuesday and to the instructor on Thursday of the week indicated.

Events of Interest Fall 2000 (may be cancelled or postponed due to fires)

Sept 1st 2 weekends – algae sampling on Clark Fork River

Sept 7 – Screening of video Undermining a Wilderness (on the proposed Rock Cr. Mine)
7pm in 352 Soc Sci

Sept 14 – Mt Sentinel tour if open

Sept 14-16 – Alliance for Wild Rockies Rendezvous at Missoula Children's Theatre
agenda at www.wildrockiesalliance.org

Sept 15-16 Missoula Household Haz Waste Collection Days at old northside landfill

Sept 17 – Possible day long field trip (depends on fire closures); meet at 8 am at UM tennis courts parking lot -- probably Clark Fork River Restoration Tour

Sept 21 – Milltown Dam tour; 5:30-7pm, meet at East Gate parking lot by foot bridge

Sept 22-24 Conference on Spirit, Commerce and Sustainability, Holiday Inn Parkside
http://www.ncat.org/scsconference/

Sept 23 – 9 Nile Creek restoration ecology—Clark Fork Coalition –542-0539
9am -2pm; meet at Reserve Street's I-90 exit
UM Van will leave from UC tennis courts parking lot at 8:30 am

Sept 23 – Public Land Day – contact Marilyn Marler (marler@selway.umt.edu)

Sept 23-24 -- Changing Landscapes in Rural America, Yellowstone Park
http://www.homepage.montana.edu/~hansen/hansen/lab/

Sept 29-Oct 1 -- EVST reunion—many presentations on env. issues

Oct 5-6 AWRA conference in Yellowstone see www.awra.org/state/montana

Oct 6-7 Predator Conference in Yellowstone; call 406-587-3389

Oct 14 – River Restoration Tour; all day; meet at 8 am at UM tennis courts parking lot
Oct 15 alternate day long field trip originally scheduled for Sept 17

Also in October – tours of Missoula Wastewater plant, Frenchtown pulp mill's wastewater system, DNRC plant nursery, Bitterroot Restoration, etc.

360 Team Research Project ideas 2000

Assist Deer Lodge office of NRCS with conducting baseline studies of their project sites
characterize condition of creek/watershed where several
projects planned (including corral relocation)
characterize wetland areas under WRP projects
(good project for someone in Paul Hansen class)

Evaluate effect of fire on Mt Sentinel/ Mt Jumbo (on soil condition, on plant community, on soil biota, etc)

Compare algae or aquatic invertebrate abundance or composition at different sites on a stream.

Compare complexity of flows at different sites and relate to biological community

Assist 2nd year students with their field projects
DeArment (watershed characterization), Alter (wetland mitigation),
Chadwick (grazing & WQ), Colborn (flow complexity)

Evaluate survival of reveg plantings at Bear Creek, Dry/Rock Creek, Obrien Creek

Test seed germination rates of native plants &/or weeds under different conditions

Characterize soils and plant community on property on Miller Creek and develop prairie restoration plan for site.

Evaluate effects of Bitterroot Fires -
Jim Olsen Friends of the Bitterroot 363-5410
meet 2nd & 3rd Thursdays of month @ Teller Wildlife Refuge
call to be sure meeting is taking place

For those with GIS expertise – analyze potential effects of fires on watersheds & wildlife