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OFFICE OF THE
SENATE COUNCIL**Course Information**

Date Submitted: 12/10/2015

Current Prefix and Number: FOR - Forestry , FOR 460 FOREST HYDROLOGY & WATERSHED MANAGEMENT

Other Course:

Proposed Prefix and Number: FOR 460

What type of change is being proposed?

Major Change

Should this course be a UK Core Course? No

1. General Information

a. Submitted by the College of: AGRICULTURE, FOOD AND ENVIRONMENT

b. Department/Division: Forestry

c. Is there a change in 'ownership' of the course? No

If YES, what college/department will offer the course instead: Select...

e. Contact Person

Name: Laura R. Lhotka

Email: laura.lhotka@uky.edu

Phone: 859-257-8718

Responsible Faculty ID (if different from Contact)

Name: Chris Barton

Email: barton@uky.edu

Phone: 859-257-2099

f. Requested Effective Date

Semester Following Approval: Yes OR Effective Semester:

2. Designation and Description of Proposed Course

a. Current Distance Learning (DL) Status: N/A

b. Full Title: FOREST HYDROLOGY AND WATERSHED MANAGEMENT

Proposed Title: Forest Hydrology and Watershed Management

c. Current Transcript Title: FOREST HYDROLOGY & WATERSHED MANAGEMENT

Proposed Transcript Title: Forest Hydrology & Watershed Management

d. Current Cross-listing: none

Proposed – ADD Cross-listing :

Proposed – REMOVE Cross-listing:

e. Current Meeting Patterns

LECTURE: 3

LABORATORY: 3

Proposed Meeting Patterns

LECTURE: 3

f. Current Grading System: ABC Letter Grade Scale

Proposed Grading System: *Letter (A, B, C, etc.)*

g. Current number of credit hours: 4

Proposed number of credit hours: 3

h. Currently, is this course repeatable for additional credit? No

Proposed to be repeatable for additional credit? No

If Yes: Maximum number of credit hours:

If Yes: Will this course allow multiple registrations during the same semester? No

2i. Current Course Description for Bulletin: Principles and techniques involved in watershed management as it relates to the practice of forestry. Emphasis is placed on understanding the hydrologic cycle, plant-soil interactions from a land-use and landscape perspective, and the need for implementation of forestry best management practices.

Proposed Course Description for Bulletin: Principles and techniques involved in watershed management as it relates to the practice of forestry. Emphasis is placed on understanding the hydrologic cycle, plant-soil interactions from a land-use and landscape perspective, and the need for implementation of forestry best management practices.

2j. Current Prerequisites, if any: Prereq: CHE 104 or CHE 105, MA 109 or Calculus, FOR 200, and PLS 366

Proposed Prerequisites, if any: Forestry spring field semester, or NRE 320, or consent of instructor

2k. Current Supplementary Teaching Component:

Proposed Supplementary Teaching Component: No Change

3. Currently, is this course taught off campus? No

Proposed to be taught off campus? No

If YES, enter the off campus address:

4. Are significant changes in content/student learning outcomes of the course being proposed? Yes

If YES, explain and offer brief rationale: The lab component of the course is being removed. As a result, the course credit hours are being reduced from 4 credit hours to 3 credit hours. Forestry and NRES students receive hands-on field training on these topics during the forestry spring field semester and NRE 320, respectively.

5a. Are there other depts. and/or pgms that could be affected by the proposed change? Yes

If YES, identify the depts. and/or pgms: Natural Resources and Environmental Science

5b. Will modifying this course result in a new requirement of ANY program? No

If YES, list the program(s) here:

6. Check box if changed to 400G or 500: No

Distance Learning Form

Instructor Name:

Instructor Email:

Internet/Web-based: No

Interactive Video: No

Hybrid: No

1. How does this course provide for timely and appropriate interaction between students and faculty and among students? Does the course syllabus conform to University Senate Syllabus Guidelines, specifically the Distance Learning Considerations?

2. How do you ensure that the experience for a DL student is comparable to that of a classroom-based student's experience? Aspects to explore: textbooks, course goals, assessment of student learning outcomes, etc.

3. How is the integrity of student work ensured? Please speak to aspects such as password-protected course portals, proctors for exams at interactive video sites; academic offense policy; etc.

4. Will offering this course via DL result in at least 25% or at least 50% (based on total credit hours required for completion) of a degree program being offered via any form of DL, as defined above?

If yes, which percentage, and which program(s)?

5. How are students taking the course via DL assured of equivalent access to student services, similar to that of a student taking the class in a traditional classroom setting?

6. How do course requirements ensure that students make appropriate use of learning resources?

7. Please explain specifically how access is provided to laboratories, facilities, and equipment appropriate to the course or program.

8. How are students informed of procedures for resolving technical complaints? Does the syllabus list the entities available to offer technical help with the delivery and/or receipt of the course, such as the Information Technology Customer Service Center (<http://www.uky.edu/UKIT/>)?

9. Will the course be delivered via services available through the Distance Learning Program (DLP) and the Academic Technology Group (ATL)? NO

If no, explain how student enrolled in DL courses are able to use the technology employed, as well as how students will be provided with assistance in using said technology.

10. Does the syllabus contain all the required components? NO

11. I, the instructor of record, have read and understood all of the university-level statements regarding DL.

Instructor Name:

SIGNATURE|TTBA225|Terrell T Baker|FOR 460 CHANGE Dept Review|20150302

SIGNATURE|LGRABAU|Larry J Grabau|FOR 460 CHANGE College Review|20150716

SIGNATURE|JMETT2|Joanie Ett-Mims|FOR 460 CHANGE Undergrad Council Review|20160408

Course Change Form

<https://myuk.uky.edu/sap/bc/soap/rfc?services=>

[Open in full window to print or save](#)

Generate R

Attachments:

Upload File

Browse...

| ID | Attachment |
|-------------|-----------------------------------|
| Delete 5239 | FOR 460 UGC Review Checklist.docx |
| Delete 5973 | FOR460Syllabus121015_revised.pdf |

First 1 Last

NOTE: Start form entry by choosing the Current Prefix and Number
 (*denotes required fields)

| | | | |
|---|--|--|---|
| Current Prefix and Number: | FOR - Forestry FOR 460 FOREST HYDROLOGY & WATERSHED MANAGEMENT | Proposed Prefix & Number. (example: PHY 401G) <input checked="" type="checkbox"/> Check if same as current | FOR 460 |
| * What type of change is being proposed? | | <input checked="" type="checkbox"/> Major Change <input type="checkbox"/> Major -- Add Distance Learning <input type="checkbox"/> Minor - change in number within the same hundred series, ex 799 is the same "hundred series" <input type="checkbox"/> Minor - editorial change in course title or description which do change in content or emphasis <input type="checkbox"/> Minor - a change in prerequisite(s) which does not imply a ch course content or emphasis, or which is made necessary by the significant alteration of the prerequisite(s) <input type="checkbox"/> Minor - a cross listing of a course as described above | |
| Should this course be a UK Core Course? <input type="radio"/> Yes <input checked="" type="radio"/> No | | | |
| If YES, check the areas that apply: | | | |
| <input type="checkbox"/> Inquiry - Arts & Creativity <input type="checkbox"/> Composition & Communications - II <input type="checkbox"/> Inquiry - Humanities <input type="checkbox"/> Quantitative Foundations <input type="checkbox"/> Inquiry - Nat/Math/Phys Sci <input type="checkbox"/> Statistical Inferential Reasoning <input type="checkbox"/> Inquiry - Social Sciences <input type="checkbox"/> U.S. Citizenship, Community, Diversity <input type="checkbox"/> Composition & Communications - I <input type="checkbox"/> Global Dynamics | | | |
| 1. General Information | | | |
| a. | Submitted by the College of: AGRICULTURE, FOOD AND ENVIRONMENT | Submission Date: | 12/10/2015 |
| b. | Department/Division: | Forestry | |
| c.* | Is there a change in "ownership" of the course? <input type="radio"/> Yes <input checked="" type="radio"/> No If YES, what college/department will offer the course instead? Select... | | |
| e.* | * Contact Person Name: | Laura R. Lhotka | Email: laura.lhotka@uky.edu Phone: 859-257-8718 |
| | * Responsible Faculty ID (if different from Contact) | Chris Barton | Email: barton@uky.edu Phone: 859-257-2099 |
| f.* | Requested Effective Date: | <input checked="" type="checkbox"/> Semester Following Approval | OR Specific Term: 2 |
| 2. Designation and Description of Proposed Course. | | | |
| a. | Current Distance Learning(DL) Status: | <input checked="" type="radio"/> N/A <input type="radio"/> Already approved for DL* <input type="radio"/> Please Add <input type="radio"/> Please Drop | |
| *If already approved for DL, the Distance Learning Form must also be submitted <u>unless</u> the department affirms (by checking this box) that the proposed change affect DL delivery. | | | |
| b. | Full Title: | FOREST HYDROLOGY AND WATERSHED MANAGEMENT | Proposed Title: * Forest Hydrology and Water Management |
| c. | Current Transcript Title (if full title is more than 40 characters): | FOREST HYDROLOGY & WATERSHED MANAGEMENT | |
| c. | Proposed Transcript Title (if full title is more than 40 characters): | Forest Hydrology & Watershed Management | |
| d. | Current Cross-listing: | OR | |

| | | | |
|---|--|--|--|
| | <input checked="" type="checkbox"/> N/A | Currently ³ Cross-listed with (Prefix & Number): | none |
| Proposed – ADD ² Cross-listing (Prefix & Number): | | | |
| Proposed – REMOVE ^{3,4} Cross-listing (Prefix & Number): | | | |
| e. Courses must be described by at least one of the meeting patterns below. Include number of actual contact hours⁵ for each meeting pattern | | | |
| Current: | Lecture 3 | Laboratory ⁵ 3 | Recitation |
| | Clinical | Colloquium | Practicum |
| | Seminar | Studio | Other: _____ Please explain: _____ |
| Proposed: * | Lecture 3 | Laboratory ⁵ | Recitation |
| | Clinical | Colloquium | Practicum |
| | Seminar | Studio | Other: _____ Please explain: _____ |
| f. Current Grading System: | | ABC Letter Grade Scale | |
| Proposed Grading System:* | | <input checked="" type="radio"/> Letter (A, B, C, etc.) <input type="radio"/> Pass/Fail <input type="radio"/> Medicine Numeric Grade (Non-medical students will receive a letter grade) <input type="radio"/> Graduate School Grade Scale | |
| g. Current number of credit hours: | | 4 | Proposed number of credit hours:* |
| | | | 3 |
| h.* Currently, is this course repeatable for additional credit? | | | <input type="radio"/> Yes <input checked="" type="radio"/> |
| * Proposed to be repeatable for additional credit? | | | <input type="radio"/> Yes <input checked="" type="radio"/> |
| If YES: | Maximum number of credit hours: | | |
| If YES: | Will this course allow multiple registrations during the same semester? | | <input type="radio"/> Yes <input checked="" type="radio"/> |
| i. Current Course Description for Bulletin: | | | |
| Principles and techniques involved in watershed management as it relates to the practice of forestry. Emphasis is placed on understanding the hydrologic cycle, plant-soil interactions from a land-use and landscape perspective, and the need for implementation of forestry best management practices. | | | |
| * Proposed Course Description for Bulletin: | | | |
| Principles and techniques involved in watershed management as it relates to the practice of forestry. Emphasis is placed on understanding the hydrologic cycle, plant-soil interactions from a land-use and landscape perspective, and the need for implementation of forestry best management practices. | | | |
| j. Current Prerequisites, if any: | | | |
| Prereq: CHE 104 or CHE 105, MA 109 or Calculus, FOR 200, and PLS 366 | | | |
| * Proposed Prerequisites, if any: | | | |
| Forestry spring field semester, or NRE 320, or consent of instructor | | | |
| k. Current Supplementary Teaching Component, if any: | | | <input type="radio"/> Community-Based Experience |

| | | | |
|---|--|--------------------------------------|---|
| | <input type="radio"/> Service Learning <input type="radio"/> Both | | |
| <i>Proposed Supplementary Teaching Component:</i> | <input type="radio"/> Community-Based Experience <input type="radio"/> Service Learning <input type="radio"/> Both <input checked="" type="radio"/> No Change | | |
| 3. Currently, is this course taught off campus? | <input type="radio"/> Yes <input checked="" type="radio"/> | | |
| * <i>Proposed to be taught off campus?</i> | <input type="radio"/> Yes <input checked="" type="radio"/> | | |
| If YES, enter the off campus address: | | | |
| 4.* Are significant changes in content/student learning outcomes of the course being proposed? | <input checked="" type="radio"/> Yes <input type="radio"/> | | |
| If YES, explain and offer brief rationale: | | | |
| <p>The lab component of the course is being removed. As a result, the course credit hours are being reduced from 4 credit hours to 3 credit hours. Forestry and NRES students receive hands-on field training on these topics during th forestry spring field semester and NRE 320, respectively.</p> | | | |
| 5. Course Relationship to Program(s). | | | |
| a.* Are there other depts and/or pgms that could be affected by the proposed change? | <input checked="" type="radio"/> Yes <input type="radio"/> | | |
| If YES, identify the depts. and/or pgms: | | | |
| <p>Natural Resources and Environmental Science</p> | | | |
| b.* Will modifying this course result in a new requirement ² for ANY program? | <input type="radio"/> Yes <input checked="" type="radio"/> | | |
| If YES ² , list the program(s) here: | | | |
| | | | |
| 6. Information to be Placed on Syllabus. | | | |
| a. | <input type="checkbox"/> | Check box if changed to 400G or 500. | If changed to 400G- or 500-level course you must send in a syllabus and you <i>must include the differentiation</i> between under graduate students by: (i) requiring additional assignments by the graduate students; and/or (ii) establishing different grading course for graduate students. (See SR 3.1.4.) |

¹See comment description regarding minor course change. *Minor changes are sent directly from dean's office to Senate Council Chair.* If Chair deems the change as "not minor," the form will be forwarded to the appropriate academic Council for normal processing and contact person is informed.

²Courses are typically made effective for the semester following approval. No course will be made effective until all approvals are received.

³Signature of the chair of the cross-listing department is required on the Signature Routing Log.

⁴Removing a cross-listing does not drop the other course – it merely unlinks the two courses.

⁵Generally, undergrad courses are developed such that one semester hr of credit represents 1 hr of classroom meeting per wk for a semester, exclusive of any lab meeting. Lab meeting generally represents at least two hrs per wk for a semester for 1 credit hour. (See SR 5.2.1.)

⁶You must also submit the Distance Learning Form in order for the course to be considered for DL delivery.

⁷In order to change a program, a program change form must also be submitted.

General Course Information

- Full and accurate title of the course
- Departmental and college prefix
- Course prefix, number and section number
- Scheduled meeting day(s), time and place

Instructor Contact Information (if specific details are unknown, "TBA" is acceptable for one or more fields)

- Instructor name
- Contact information for teaching/graduate assistant, etc.
- Preferred method for reaching instructor
- Office phone number
- Office address
- UK email address
- Times of regularly scheduled office hours and if prior appointment is required

Course Description

- Reasonably detailed overview of the course (course description should match on syllabus and eCATS form)
- Prerequisites, if any (should match on syllabus and eCATS form)
- Student learning outcomes
- Course goals/objectives
- Required materials (textbook, lab materials, etc.)
- Outline of the content, which must conform to the Bulletin description
- Summary description of the components that contribute to the determination of course grade
- Tentative course schedule that clarifies topics, specifies assignment due dates, examination date(s)
- Final examination information: date, time, duration and location
- For 100-, 200-, 300-, 400-, 400G- and 500-level courses, numerical grading scale and relationship to letter grades for undergraduate students
- For 400G-, 500-, 600- and 700-level courses, numerical grading scale and relationship to letter grades for graduate students. (Graduate students cannot receive a "D" grade.)
- Relative value given to each activity in the calculation of course grades (Midterm=30%; Term Project=20%, etc.)
- Note that undergraduate students will be provided with a Midterm Evaluation (by the midterm date) of course performance based on criteria in syllabus
- Policy on academic accommodations due to disability. Standard language is below:

If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (Room 2, Alumni Gym, 257-2754, email address jkarnes@email.uky.edu) for coordination of campus disability services available to students with disabilities.

UGE Review ()

Prerequisites should match on eCATS form and syllabus

✓ Revise missed exam and late work policy to allow students with excused absences one week following the absence to contact the instructor (instead of contacting prior to the absence)

Any attendance policy?

Course Policies

- Attendance
- Excused absences
- Make-up opportunities
- Verification of absences
- Submission of assignments
- Academic integrity, cheating & plagiarism
- Classroom behavior, decorum and civility
- Professional preparations
- Group work & student collaboration

| |
|---|
| <p>Committee Review ()</p> <p>Comments</p> |
|---|

FORESTRY 460 – FOREST HYDROLOGY AND WATERSHED MANAGEMENT FALL 2015 (3 credits)

Instructor: Dr. Chris Barton
203 Thomas Poe Cooper Building
Phone: 859.257-2099
Email: barton@uky.edu
Office Hours: 9:15-11:00, T-TH, other times by appointment.

Class Time: Lecture: Tuesday and Thursday 11:00 -12:15

Location: Lecture: 212 Thomas Poe Cooper Building

Required Text: Brooks, K.N, P.F. Ffolliott, and J.A. Magner. 2013. *Hydrology and the Management of Watersheds*. 4th Ed. Ames, Iowa: Wiley-Blackwell.

Prerequisites: Forestry Spring Field Semester or NRES Camp (NRE 320) or consent of instructor. A basic understanding of math, biological and physical sciences is required. Basic knowledge of spreadsheet and word processing is also required.

For Whom Intended:

Students in Forestry, Natural Resource Conservation, Agronomy, Engineering, and others interested in the hydrology of forested watersheds and watershed management.

Course Description from Course Bulletin:

Principles and techniques involved in watershed management as it relates to the practice of forestry. Emphasis is placed on understanding the hydrologic cycle, plant-soil interactions from a land-use and landscape perspective, and the need for implementation of forestry best management practices.

Student Learning Outcomes:

After completing this course, the student will be able to:

- Explain the hydrologic cycle and discuss how climate, soils, vegetation, and land-use affect the amount, timing and quality of water.
- Quantitatively determine or estimate the magnitude of hydrologic variables and become familiar with analytical procedures for evaluating precipitation, evapotranspiration, infiltration and streamflow.
- Explain how hydrologic information can be used in forest resource management so that you may determine where water resource management objectives are compatible and where they conflict with other resource management objectives.
- Analyze the role of watershed management and multiple use in planning and implementing natural resource programs while becoming familiar with current issues in watershed management and water resources.

Writing Learning Outcomes

By the end of the course you will be able to successfully:

- Develop a paper that is essentially free of mechanical errors (grammar, punctuation, spelling, and syntax) and awkwardness; using a style that is appropriate to the purpose and audience.

- Discover, evaluate, and develop an argument on a topic utilizing documentation that conforms to the formats and the citation conventions of the subject area.
- Discuss the process of composing a successful text which frequently takes multiple drafts, with varying degrees of focus on generating, revising, editing, and proofreading.
- Research, plan and compose an essay about a complex issue in forestry and natural resources for a general university audience.

Grading:

| ITEM | PERCENT OF TOTAL | DATE (2015) |
|----------------|------------------|--------------------|
| Exam I | 25 | October 8 |
| Final Exam | 25 | December 1? (? pm) |
| Opinion Paper | 10 | September 15 |
| Problem Set I | 15 | October 1 |
| Problem Set II | 15 | November 3 |
| Review Paper | 5 | November 24 |
| Quiz (5) | 5 (1 each) | Periodic |

Final course grades will be based on cumulative percentages as follows:

- A: $\geq 89.46\%$
- B: $\geq 79.46\%$ and $< 89.45\%$
- C: $\geq 69.46\%$ and $< 79.45\%$
- D: $\geq 59.46\%$ and $< 69.45\%$
- E: $< 59.45\%$

Exams must be taken at the designated times unless *prior* arrangements have been approved by the instructor. Prior arrangements can be made for academic or health reasons, but will not be made for personal convenience.

Five short (15-minute) in-class quizzes will be given over the course of the semester. Each quiz will cover previous class material and/or material from reading assignments. Failure to be in class on the day of a quiz will result in a grade of zero, unless the absence meets University policy on excused absences (see below). In the case of an excused absence, students will be given an alternative assignment that will be due the following class period.

Late problem sets or papers will be deducted by 5% *each day* unless *prior* arrangements have been made with the instructor.

Mid-term Grade

Mid-term grades will be posted in myUK by the deadline established in the Academic Calendar (<http://www.uky.edu/Registrar/AcademicCalendar.htm>)

Final Exam Information

The final exam will be held as per the Schedule of Classes for this semester. Its location will be the course classroom.

Excused Absences

Students need to notify the professor of absences prior to class when possible. The University defines the following as acceptable reasons for excused absences: (a) serious illness, (b) illness or

death of family member, (c) University-related trips, (d) major religious holidays, and (e) other circumstances found to fit “reasonable cause for nonattendance”.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Two weeks prior to the absence is reasonable, but should not be given any later. Information regarding major religious holidays may be obtained through the Ombud (859-257-3737, <http://www.uky.edu/Ombud/ForStudents.ExcusedAbsences.php>).

Students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused or unexcused) per university policy.

Makeup Policy for Exams and Assignments

Per Senate Rule 5.2.4.2, students missing any graded work due to an excused absence are responsible: for informing the Instructor of Record about their excused absence within one week following the period of the excused absence (except where prior notification is required); and for making up the missed work. The professor must give the student an opportunity to make up the work and/or the exams missed due to an excused absence, and shall do so, if feasible, during the semester in which the absence occurred.

Verification of Absences

Students will be asked to verify their absences in order for them to be considered excused. Students must provide “appropriate verification” when claiming an excused absence because of illness or death in the family. Appropriate notification of absences due to university-related trips is required prior to the absence.

Schedule of Topics and Reading Assignments

| Date | Topic | Brooks et al. | Handout |
|--|--|---------------|------------------------------------|
| August 27 | Course Information DVD Watersheds | | |
| September 1 | I. Water Resources | 1:3-25 | For want of a drink, The Economist |
| September 3 September 8 | II. Hydrologic Cycle | 2:27-48 | |
| September 10 September 15 | III. Precipitation | 3:49-79 | |
| September 17 | IV. Interception and Evapotranspiration | 4:81-112 | |
| September 22 September 24 September 29 | V. Infiltration | 5:113-140 | Surface Water |
| October 1 October 6 | VI. Runoff and Streamflow | 6:141-172 | |
| October 8 | EXAM I | | |
| October 13 October 15 | VII. Stream Morphology | 10:267-295 | Acuña et al. 2014 |

| and Classification | | | |
|--------------------|-------------------------------|------------------------|--|
| October 20 | | | |
| October 22 | VIII. Water Quality | 11:297-328 | |
| October 27 | | | |
| October 29 | IX. Erosion/Sedimentation | 8:199-241 9:243-265 | |
| November 3 | | | |
| November 5 | X. Wildland Management | 12: 333-388 | Aust, WASP |
| November 10 | | 13:389-423 | |
| November 12 | XI. Wetland Management | | |
| November 17 | | | |
| November 19 | XII. Restoration Ecology | | Richardson, C.J., and N.A. Hussain. 2006. |
| November 24 | | | |
| November 26 | No Class | | |
| December 1 | Restoring the Garden of Eden | | |
| December 3 | XIII. Marine Protection Zones | | |
| December 8 | Southern Passage | | |
| December 10 | Review | | |
| December 1 | FINAL EXAM | | |

Problem Set/Paper Schedule:

| Assignment | Topic | Date Due |
|----------------|------------------------------------|--------------|
| Opinion Paper | Water Issues | September 15 |
| Problem Set I | Precipitation, Interception and ET | October 1 |
| Problem Set II | Erosion and Sedimentation | November 3 |
| Review Paper | Restoration Ecology | November 24 |

Assignments

For all assignments, a hard copy will be turned in at the beginning of class on the day on which it is due.

Problem Set Instructions

Specific requirements for homework assignments will be provided in the instruction for the assignment. In general:

1. References should be cited in the text when appropriate e.g. (Brooks et al., 2013). Use the reference list in the text as a guide for citation formats.
2. Calculations must be shown to receive full credit.
3. The write-up will be typed, however, calculations can be hand-written if neatly presented.

Additional Information:

- a. Calculations should be neatly printed in an organized sequence with the required unit conversions.

- b. Answers should be circled or highlighted in some manner.
- c. All figures should be computer generated with axes labeled, e.g. Annual Precipitation (cm).
- d. All figures and tables should have a title.

*****Neatness is important! Poorly organized or sloppy reports will not be accepted.*****

Writing Assignments

There are three writing assignments for this course. Detailed instructions on the writing assignments are listed below.

1. Opinion Paper Instructions

For decades, the coal industry has been required to minimize impacts to surface waters through the use of sediment control structures, water treatment systems and vegetative covers. In general, these practices are employed to minimize the effects of excessive erosion and sedimentation and to limit acidity and metal mobility from the oxidation of acid producing rock exposed during the mining process. Recently, however, interest has arisen in another water quality metric, specific conductance, that isn't necessarily controlled by the use of those practices. Specific conductivity is a quick and inexpensive way to estimate the concentration of total dissolved solids (minerals, salts, and ions) in water. An electrical conductivity meter essentially measures the ability of water to conduct an electrical current and is expressed in units of microSiemens per centimeter of water at 25 degrees centigrade (μS). From a water quality and aquatic health diagnostic standpoint, conductivity by itself has little meaning except that levels increase as levels of dissolved solids in water increase. The conductivity issue as it pertains to surface mining arose partially in response to a breakthrough paper by scientists at the U.S. Environmental Protection Agency (EPA) that was published in the Journal of the North American Benthological Society (Pond et al., 2008). In their study, water quality and aquatic bugs were examined in 37 small streams in West Virginia, some below valley fills and others in unmined watersheds. Results clearly showed changes in water quality and bug communities due to the mining. Specific conductance was identified in the study as a good indicator for stream deterioration as expressed by the loss of certain groups of bugs, such as mayflies, in high conductivity waters. An apparent threshold at a conductivity level of about 500 μS was implied from the study by many as separating non-impaired from impaired streams. Subsequent studies in eastern Kentucky supported those findings. Responding to this information, public outcry and need for additional information, the EPA has issued guidance in April 2010 indicating that water discharged from mines in Appalachia should have conductivity levels below 300-500 μS . Levels above 500 are considered harmful and sites exhibiting these characteristics could be denied a mining permit due to Clean Water Act concerns unless steps are taken to improve stream water quality in the watershed. As a result of this conductivity rule, environmentalists are generally happy, the mining community is outraged, civic leaders are concerned, and yet we still don't know exactly what is killing the mayflies and other sensitive aquatic life.

Using this background, write a four-page (double spaced) (12 pt. font) position paper on whether or not the EPA's conductivity rule is fair. Use information from the literature to justify (support) your position. Given that this is a "Watershed Management" class, identify potential impacts that the adoption or dismissal of this guidance rule could have on water resources. (*Think about the consequences from both an economic, ecologic and environmental standpoint*).

Note: an internet and/or library search will be needed. (*several articles have been written about the subject in the Herald Leader*)(*the Herald Leader is archived electronically in our library*).

Note II: This is a “position” paper, so no theory is right or wrong; however, you will be graded on your ability to research the issue, use literature to support your position, and effectively champion your argument. Points will be deducted on wishy-washy arguments (or flip-floppers); i.e., pick one direction and stick with it!

For more information on the issue see:

Faces of Coal website and their position (with videos) on the conductivity rule

<http://www.facesofcoal.org/index.php?conductivity>

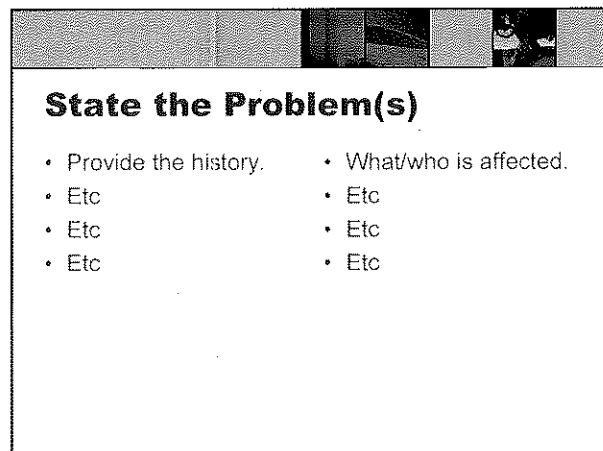
EPA news release on the issue:

<http://yosemite.epa.gov/opa/admpress.nsf/e77fdd4f5afd88a3852576b3005a604f/4145c96189a17239852576f8005867bd!OpenDocument>

Pond, G.J., M.E. Passmore, F.A. Borsuk, L. Reynolds, and C.J. Rose. 2008. Downstream effects of mountaintop coal mining: comparing biological conditions using family- and genus-level macroinvertebrate bioassessment tools. *Journal of the North American Benthological Society*. 27: 717-737.

2. Restoration Ecology Paper Review

Find a journal article (peer reviewed publication in the primary literature, *i.e.* not a review article or a technical report) on a restoration project that has, or is, taking place outside of the United States (examples: Lake Dongting Reclamation, China; Amazon Reforestation, Brazil; Mine Land Restoration, Australia; Elephant Habitat Restoration, Africa; *etc.*). After reading, write a review of the paper (2 pages maximum, single spaced, submit in hard copy). Please address the items outlined in the following PowerPoint presentation in your paper.



State the Problem(s)

- Provide the history.
- Etc
- Etc
- Etc
- What/who is affected.
- Etc
- Etc
- Etc



What is Driving the Restoration?

- T & E species?
- Human health?
- Water Quality?
- Etc (essentially....somebody (thing) is financially supporting the work, there is usually one underlying theme that helps get these projects off the ground)



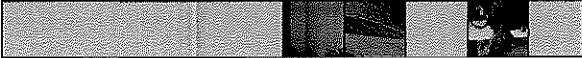
What was the Approach?

- What was done to restore/improve conditions?
- How?



What were the Results?

- Success
- Failures (there are always failures in these efforts)



What I Would do Differently

- Not what *Barton* would do differently, but what you would do that the authors either overlooked or made a bone headed move in initiating from the beginning.



The Human Element?

- Restoration efforts are often impeded by cultural barriers (too close to civilization, loss of jobs, potential environmental consequences i.e. flooding, smoke, land-use change etc.). Were compromises made in the restoration design to accommodate the human factor?



Reference

- Please provide a reference of the article .

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When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording or anything else from another source without appropriate acknowledgment of the fact, the students are guilty of plagiarism.

Plagiarism includes reproducing someone else's work, whether it be published article, chapter of a book, a paper from a friend or some file, or whatever. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be. Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone.

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(<http://www.uky.edu/EM/UKAlert>). Always turn cellular phones to silent mode when entering the classroom. If you observe or receive an emergency alert, immediately and calmly inform your instructor.