The Roy Shlemon Course in Applied Watershed Science

J. Mount and P. Moyle
S. Yarnell, TA
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Course Goals

The field of watershed science is inherently multidisciplinary, involving a broad array of physical, biological and social sciences. Traditional hierarchical undergraduate and graduate education programs that train students in the fields that support watershed science necessarily emphasize in-depth study within a specific discipline. This focused education is vital to producing professionals with useful technical and analytical skills. However, most students who pursue careers in watershed science rarely work solely within their discipline. Rather, their work is inevitably integrated with other professionals addressing related issues with different skill sets. The ability to work closely and collaboratively with professionals from different backgrounds is fundamental to success in the field of watershed science.

This course seeks to introduce advanced undergraduate students to multidisciplinary collaborative watershed analysis through combined laboratory and field study of a selected watershed. Students from diverse backgrounds will work in cooperative research teams to assemble and analyze published information on a selected watershed. These teams will identify and report upon key geologic, hydrologic, biologic, or conservation issues within the watershed. In addition, each team will develop a plan for field observations or experiments that will inform these issues. This will include development of hypotheses and proposed location and methods of field study. Upon completion of the field study, students will report on their conclusions.

Requirements:

This class will be limited to advanced undergraduates and graduate students with training within a discipline that typically produces professionals within the field of watershed science. Because of logistics associated with fieldwork and the need to seek a balance in the range of disciplines involved, enrollment will be limited to prior approval by instructor only.

The course is worth five units. Lecture/Discussion will meet weekly during the quarter for two hours, location and time to be decided in a class meeting at the beginning of the quarter. The classroom meetings will involve lectures by the instructors and class participants on topics related to the study

watershed. Following completion of the quarter, class participants will be required to participate in a two-week field study of the watershed. Grading will be deferred until two weeks following completion of fieldwork.

Grades in the course will depend upon quality of written work (60%), quality of oral presentations in class/field (20%), and quality of effort in field study (20%). It is important to note two key expectations for students in this class. First, this course emphasizes collaborative study. This means that efforts to foster effective collaboration will play an important role in determining the final grade. Second, because this course is limited to advanced undergraduate and graduate students, there is an expectation that each student will be expert within their specific discipline, and will provide that expertise to the entire class effort. This means that class participants must assume the role of both student and teacher, learning from and educating their peers.

There are three expected written reports for this class. During the classroom portion of the course, participants will prepare an in-depth report on a topic to be determined during early class meetings. This report will be sole-authored, although it may incorporate or refer to material from collaborative team members. Although technical in nature, the report will be written in a style that is accessible to the educated lay audience. Upon completion, this report will be distributed to at least two class members for peer review and, following review by the instructor, returned for recommended revisions. All final papers will assembled into a single volume, edited by the instructor, and posted on the web prior to departure to the field.

Each collaborative team will develop a short description of the proposed field study. This work will describe the issue to be addressed by the field study, the locations of research, methodology to be employed, and methods of analysis to be used. This will be completed and reviewed by the instructor prior to the 9th week of the quarter.

All collaborative teams will be required to prepare brief reports on their field studies. These reports, which may be multi-authored, will include a summary of the issue addressed, key hypotheses tested, methods and locations of data gathering, and analyses of data. It will be the responsibility of the student to see that this report, and all supporting data, will be incorporated into the class website.

Costs:

There are no laboratory fees for this course. All costs in the field, including shuttle, guides, equipment and food, will be supported by the Roy Shlemon Endowed Chair in Applied Geoscience. Students will be required to pay for their own transportation to Anchorage, Alaska, and any lodging or food costs while in Anchorage.

Class Schedule:

Since this is the first time the course is being taught, this schedule should be viewed as tentative with anticipated adjustments during the quarter.

Week 1: Lecture: introduction to the course goals and requirements, general description of Copper River Watershed. Discussion: assessment of technical skills of students, assignment of collaborative teams, discussion of potential focused topics.

Week 2: Lecture: Geologic history of Copper River (Roeske Guest Lecture). Discussion: final selection of topics for review by each student and development of general natural history paper outline.

Week 3: Lecture: Surface Processes of the Copper River Basin. Discussion: review of DEM, Landsat Imagery, Air Photos of area of interest. Identification of additional data sources. Develop detailed natural history paper outlines.

Week 4: Lecture: Aquatic and Terrestrial Ecosystems of the Copper River. Discussion: initial development of field study plans.

Week 5: Lecture: Social and Economic Issues of the Copper River Basin (Guest Lecture). Discussion: collaborative teams review and refine detailed natural history paper outlines.

Week 6: Lecture: Field methods. Discussion: Review of trip itinerary (students must have booked plane reservations by this time), review and refine field plans.

Week 7: No lecture: draft natural history papers due at beginning of class and distributed for peer review. Collaborative teams meet and prepare for presentations.

Week 8: Group presentation of natural history papers and preliminary field study plan.

Week 9: Group presentation of natural history papers and preliminary field study plan. Peer-reviewed papers returned.

Week 10: Group presentation of natural history papers and preliminary field study plan.

Pre-trip meeting: June, 19. Will include final discussion of logistics, trip planning, assembly of field equipment, safety gear. Finalized field study plans presented. Final natural history papers submitted and posted on web.

Departure for trip: Students must arrive in Anchorage, Alaska by the evening of June 26. Student is responsible for transportation to Anchorage Guest House, where trip will assemble.

Field Schedule: TBA

Return from trip: trip will end in the town of Cordova, Alaska on the afternoon of July 9. Students may choose to take the ferry to Anchorage for return trip. Others may choose to fly directly from Cordova.

Final Write-ups of field reports are due one week after return (July 19). Grades assigned one week following.

Shlemon Course Class Schedule
(Spring, 2002)

Week/Date	Lecture	RETURNED	Discussion	DUE
Wk 1 – April 3	Introduction		Organize groups, Generate topics	
Wk 2 – April 10	Geology		Develop general outline for paper (as group)	General paper outline – due at end of class
Wk 3 – April 17	Surface Processes	General paper outlines	Review general outlines, Develop detailed outlines	
Wk 4 – April 24	Ecology		Discuss field plans	Detailed paper outline – due at beginning of class
Wk 5 – May 1	Field Methods	Detailed paper outlines	Review detailed outlines	Field Plan Outline – due at beginning of class
Wk 6 – May 8	Field Methods	Field Plan Outline	Review/Discuss Field Plans	
Wk 7 – May 15	No Lecture		Distribute papers for peer-review, groups meet	Papers due at beginning of class
Wk 8 – May 22	Group presentation of paper, field plans		Discuss Group presentation	Peer-reviewed papers for wk 9/10 groups
Wk 9 – May 29	Group presentation of paper, field plans	Distribute peer-reviewed papers	Discuss Group presentation	Peer-reviewed papers for wk 8 group
Wk 10 – June 5	Group presentation of paper, field plans		Discuss Group presentation	Final field plans
Pre-Trip mtg – June 19	Discuss trip details	Final field plans	Review finalized field plans	Final Papers due (posted on web)
June 26 – July 10	ALASKA			
July 19				Field plan report due (web)