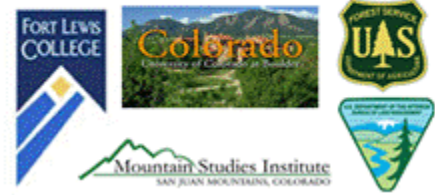


San Juan Natural Resource Challenge

Fort Lewis College Innovation Month
Course & Internship Program
June 6 to August 12, 2010
6 or 9 academic credits

The San Juan Collaboratory

Research, Education, and Outreach



This program combines a course in natural resource management with a career-building internship. The two week (3 credit) course will be based in Durango and Silverton, Colorado and be taught by the Mountain Studies Institute. It will combine lecture, discussion, and field exercises. Each student will be placed with a natural resource scientist or manager for an 8 week (3 or 6 credit) field experience/internship. Students will learn methods used by natural resource professionals in the field and office and be responsible for contributing to real-world projects. About 30% of past interns have been offered employment by mentoring agencies as a result of their field experience. Due to the many logistics and planning requirements of this program, participation requires cooperation and a spirit of adventure. Examples of past internships can be found at:

http://www.mountainstudies.org/Research/Internship_Program.htm



The program is made possible by the San Juan Collaboratory, which partners the Mountain Studies Institute with San Juan Public Lands Center (USFS/BLM), Fort Lewis College, and University of Colorado at Boulder. Students may sign up for the course via FLC or CU. The CU version of the course includes housing for the full 10 weeks, while the FLC version includes housing for one week in Silverton and accommodations during the other 9 weeks must be covered out-of-pocket.

FLC students have two different options for academic credit. Option #1 is 9 credits and option #2 is 6 credits. Option #2 is specifically designed to serve students who chose to apply half of their internship (150 hours) to ENVS 310 as a requirement for their major.

Course size is limited based on the number of internships available. Upper division students are given priority. Minimum prerequisite: 2 courses (6 credits) in the natural sciences.

Instructor: Koren Nydick, PhD
Email: Nydick_k@fortlewis.edu
Phone: 970/247-7071
130A Reed Library, Fort Lewis College

Assistant Instructor: Aaron Kimple, MS
Email: Kimple_A@fortlewis.edu
Phone: 970/247-7071
130A Reed Library, Fort Lewis College

COURSE DESCRIPTIONS:

ENVS 390 NATURAL RESOURCE MANAGEMENT (3)

Course dates: June 7-11, July 5-9, and Aug 11 (3 credits)

This class will explore science, management, and policy of natural resource challenges, with a focus on SW Colorado. Topics include water resources, wetlands, forests, and high altitude ecosystems and issues such as oil and gas development, air and water pollution, and climate change. The course will occur at the start, middle, and end of the Natural Resource Challenge Program. Students will receive grades based on meaningful participation, field reports, quizzes, and a written paper.

ENVS 390 NATURAL RESOURCE INTERNSHIP (3) (6)

Option 1: 6 credits or Option 2: 3 credits*

Course dates: June 6 – Aug 13 (*except contact hours do not include course dates for ENVS Natural Resource Management indicated above*)

Each student will be placed with a natural resource scientist or manager for a 8 week field experience/internship. Students will learn methods used by these professionals in the field and office and be responsible for contributing to the success of real-world projects. Students may be based in multiple locations, including Durango and Silverton, depending on their assignment. Students will receive grades based on meaningful participation, quality of performance, journal entries, and an oral “Powerpoint-type” presentation.

10 WEEK PROGRAM COSTS

Option #1: Tuition for 9 credits (\$1,260) + program fees (\$1,370) = \$2,630

Option #2*: Tuition for 6 credits (\$840) + program fees (\$1,370) = \$2,210

Additional out of Pocket costs best faith estimate for both options = \$1,800

Program fees include group transportation during ENVS 390 Natural Resource Management portions of the program, 1 week of lodging and 5 days of meals at MSI field station in Silverton, activities, speakers, and supplies. Out-of pocket expenses include additional 9 weeks of lodging, meals, entertainment, and non-group transportation during the 10 week program. Students are responsible for their transportation to their internship location. Some positions may require use of a personal vehicle for internship activities, but these costs may be reimbursed depending on the position.

Students with internships based in Durango are encouraged to stay in the FLC dorm during the program. Students with internships based in Silverton are encouraged to stay at the MSI field station during the program. Contact Aaron Kimple at kimple_a@fortlewis.edu or 970-247-7071 to arrange these accommodations and pay out-of-pocket costs, which are about \$850 to \$1000.

Some funding (up to \$2,000 per student) will be available to help defray costs for qualified students who have financial need. Students will need to apply for these funds via the Mountain Studies Institute.

* A full 10 week commitment to the program is required for either option. Option #2 is specifically designed to accommodate students who choose to apply half of their internship (150 hours) to ENVS 310 as a requirement for their major. Students enrolling with option #2 must also enroll in ENVS 310 (with approval from Tina Evans, the ENVS 310 instructor).

2010 SCHEDULE (Required readings are to be added)

Students over the age of 25 and/or those with required transportation certifications may be asked to assist in driving.

June 6 – June 11, class will be based at Fort Lewis College with field trips to locations within an hour drive each way (transportation included). Accommodations and meals are NOT included in program fee and must be covered by the student out-of-pocket.

June 6 (Sunday): Safety Orientation

Wilderness First Aid/CPR

June 7: Introduction

1. Introduction to Course
 - a. Course logistics:
 - i. Map, itinerary, timeline
 - ii. Paperwork, assignments
 - iii. safety
 - b. Student background/motivation/interests
2. Introduction to SW Colorado
 - a. Physical geography: geology, climate
 - b. Ecosystems
 - c. Socio-economics
 - d. Land ownership
 - e. Land & water management issues introduction
3. Intro to the Animas River: Raft Trip

June 8:

1. Morning – Land Management Laws & Policy

- Clean Air Act
- Clean Water Act
- Endangered Species Act
- Wilderness Act
- National Environmental Policy Act
- National Historic Preservation Act
- Colorado Water Law
- Oil and Gas Conservation Act of the State of Colorado. COGCC
- National Forest Plan

2. Afternoon – Panel – What are the most pressing management issues you face? (forestry, veg/range, water, air, wildlife, geology/oil&gas/mining, recreation (USFS, DOW, USFS, BLM, SWWCD, ACOE, SUIT, water quality)

Alternate – hike at Chris Park with Matt Janowiak to discuss land exchange issues

June 9: Old Growth Forest & field trip

(Contacts: Sally Zwistler, Laurie Swisher)

- What is Old Growth Forest?
- Management Issues
- Science methods/data collection/GPS
- Data Analysis
- USFS GIS system
- How data is used

June 10: Aspen Management, Sudden Aspen Decline (SAD), & field trip

(Contacts: Dave Crawford, Deborah Kill, Julie Korb, Erin Lehmer)

<http://www.fs.fed.us/r2/sanjuan/projects/aspen/index.shtml>

- Aspen and SAD
- Management Issues
- Environmental Assessment (EA)
- Science methods/data collection
- Data Analysis
- How data is used

June 11: Water Resources, Missionary Ridge Fire & Fruitland Outcrop field trip

(Contacts: Kelly Palmer, Win Wright, Gary Gianniny, Pam Leshack)

- Management Issues
- Science methods/data collection
- Data Analysis
- How data is used

June 14 - July 2: Field Experience/Internship, Part I for 3 weeks

Internships will be based in various locations, but mainly in Durango and Silverton.

Accommodations and meals during internship portion of the program are NOT included in program fee and must be covered by the student out-of-pocket.

June 25: Paper topic due

July 2: Journal #1 due

July 2: Paper Outline due

July 5 -9, class will be based at the Mountain Studies Institute field station in Silverton.

Accommodations and meals ARE included in program costs. For students not based at MSI in

Silverton, you will need to check in and pick up a key for accommodations. Regular check-in is on Monday, July 5 from 4 to 6 pm unless previously arranged with Jim Donovan at

finance@mountainstudies.org or 970-387-5161. You may consider spending the July 4 weekend in Silverton and enjoying the festivities. Please give him a week's notice for special arrangements.

July 5: Holiday during day, 2 hour evening class to share progress reports, 5:30 to 7:30 pm at

location TBD. Each student will give an update on: 1) their internship (what you've been doing, what you've learned, any challenges or unexpected benefits) and 2) the topic for their paper. About five minutes per student per item is expected. **Dinner is provided!**

July 6: Fen Wetlands Hydroecology & Restoration & field trip

- What is a fen wetland?

- Fen hydro-ecology
- Fen Condition & disturbances
- Restoration goals & methods
- Monitoring

July 7: Mining Legacy and Watershed Restoration/Biochar Project field trip

- Brief history of hardrock mining
- Impacts of hardrock mining
- Water, Soil, Wildlife Impacts
- Remediation Efforts
- Biochar
- Scientific method for land management
- Monitoring

Required reading:

1. Surf the BLM Abandoned Mine Lands Program website, BLM AML
http://www.blm.gov/wo/st/en/prog/more/Abandoned_Mine_Lands.html
2. Read **Abandoned Mine Lands: A Decade of Progress Reclaiming Hardrock Mines**
http://www.blm.gov/wo/st/en/prog/more/Abandoned_Mine_Lands/AML_Publications.html
(focus on intro pg 2-3, history pg 4-7, Animas River Watershed pg 8-11)
3. Read Church, S.E., 2007, Environmental effects of historical mining in the Animas River watershed, southwestern Colorado: U.S. Geological Survey Fact Sheet 2007-3051, 4 p. Found at: <http://pubs.usgs.gov/fs/2007/3051/> **Print it, read it, and bring it to class and on the field trip.**
4. Surf the International Biochar Institute web page: <http://www.biochar-international.org/biochar> . Know what biochar is and what its benefits are.
5. Read biochar guide to field trials <http://www.biochar-international.org/publications/IBI>

Further Reading:

- North American Biochar Conference at CU Boulder, 2009
<http://cees.colorado.edu/northamericanbiochar.html>
- Other IBI Publications <http://www.biochar-international.org/publications/IBI>

July 8: Alpine Ecosystems: Climate, Water, Vegetation & Wildlife

- Climate Change
- Dust on Snow
- Water Resources
- Vegetation Research
- Pika Monitoring

July 9: Air Quality: nitrogen, mercury, ozone, smoke

- Air quality overview
- Monitoring and research
- How data is used

July 12 – Aug 10: Experience/Internship, Part II for 4.5 weeks

Internships will be based in various locations, but mainly in Durango and Silverton. Accommodations and meals during internship portion of the program are NOT included in program fee and must be covered by the student out-of-pocket.

July 23: Draft 1 of paper due!

Aug 10: Journal #2 due!

August 11: Papers due! Email to nydick_k@fortlewis.edu by 5:00 pm

Aug 12: Fen Monitoring & Restoration Field Day

Aug 13: Student Presentations & Celebration (Lunch Provided)

Mentors & students turn in evaluations by today!

Students must leave a copy of the presentation with the instructor, including the last page with description of your experience.

GRADING

ENVS 390 Natural Resource Management (3 credit course)

Meaningful participation	30%
“Pop” Quizzes	20%
Field Reports	25%
Paper Draft	5%
Final Paper	20%

Due dates - *Field reports due the next class day after the activity.*

June 25: Paper topic due

July 2: Paper Outline due

July 23: Draft 1 of paper due!

August 11: Papers due!

Aug 13: Evaluations due before you leave

Paper Assignment: Prepare a research-based paper (citations, etc.) of approximately 8-10 pages in length (double spaced) about the history, current status and impact on natural resource science and management of your topic (TBD). You should develop a thesis, or argument, in your paper, however, and not just give an overview. The topic and argument are the student’s choice, but must be based on one of the following. No two students may have the same topic, so the first to select a given topic will be accepted.

Suggested topics:

Endangered Species Act	No net loss of wetlands
Sustainable Forests Initiative	Healthy Forest Initiative
Prescribed Fires	National Forest Planning
The Clean Air Act	Clean Water Act
Forest Fragmentation	Climate Change
Carbon Sequestration	Monitoring
Old Growth Forests	Use of Science
Wilderness and Roadless Areas	Geographic Information Systems
Hardrock mining	Oil and Gas Development

Western Water Laws
 Wildlife Corridors
 Or select your own topic (must be approved by instructor)

Papers will be graded on:

Appropriate background review	10 points
Up-to-date status summary	15 points
Discussion of scientific perspective	15 points
Anticipated management and/or policy actions	15 points
Projected long-term impacts of actions	15 points
Overall assessment of present/future issues	10 points
Valid and well developed argument for your thesis	10 points
Overall quality of writing (Grammar, organization, ability to spur interest)	10 points
Total	100 points

Each day late past the due date results in -5 points.

ENVS 390 Natural Resource Internship (3 or 6 credits)

Participation & Attendance - Were you there? Did you do the work?	15%
Performance - How well did you do the work? Did you have a cooperative attitude? A solid work ethic? A desire to learn?	50%
Journals – thoughtful and complete entries	10%
Oral “Powerpoint-type” Presentation	20%
Self- and Program Evaluation	5%

Due dates - July 2: Journal #1 due
 Aug 10: Journal #2 due
 Aug 13: Presentation due
 Aug 13: Evaluations due before you leave

The numerical-to-letter grade conversion for both courses is as follows (subject to change):

A = 95-100	B+ = 86-89	B- = 80-82	C = 73-75	D+ = 66-69	D- = 60-62
A- = 90-94	B = 83-85	C+ = 76-79	C- = 70-72	D = 63-65	F = 59 or below

COURSE AND FORT LEWIS COLLEGE POLICIES

You represent Fort Lewis College, Mountain Studies Institute, and your internship agency or organization while you are in this program. You are expected to act legally and responsibly while participating in this program both during course activities and also during your free time. You must conduct yourselves in a manner which will inspire public confidence and trust. Note that Silverton is a small town and it is especially important to conduct yourselves in a legal and respectful manner in Silverton.

Expectations and Collegiality

You are expected to attend all course activities, read all required materials, and perform activities and assignments to the best of your ability. All students are expected to demonstrate respect to their fellow students, instructors, and others at all times. Professional courtesy and sensitivity are

especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the course so that I may make appropriate changes to my records. Collegiality also includes being prepared to begin class on time, and doing whatever you can to help maintain a positive learning environment in the course. Students will not use, display, or in any way utilize any portable electronic devices such as cell phones or MP3 players. If any such devices are on your person, they will be turned off. Violation of collegiality policy is subject to a significant grade deduction on exams or in the course at the discretion of your instructor.

Alcohol and Drug Policy

No illegal drug possession or use is allowed.

The abuse or unlawful use, consumption, transportation, offer for sale, manufacture, dispensing, sale, distribution, possession of alcohol, or inappropriate behavior resulting from the use of alcohol is prohibited at all times on the Fort Lewis College campus and at any sanctioned College activity whether on or off campus. Further, the consumption of alcoholic beverages is prohibited in all Fort Lewis College residence halls at all times. This restriction applies to all residence hall occupants regardless of age. In the apartment complexes, a person 21 years of age or older is permitted to consume alcohol in the privacy of his/her apartment only; however, lounges and common areas are considered public spaces and open containers are prohibited under Sec. 3-10, Code of Ordinances for the City of Durango.

At the MSI field station in Silverton persons 21 years of age or older may responsibly consume alcohol, but may NOT do so to the point of becoming disorderly, overly loud, disrespectful, or dangerous.

Alcoholic beverages are prohibited in state vehicles or in rental vehicles utilized for travel on College business.

Providing alcoholic beverages to individuals who are under 21 years of age or possession of alcohol by individuals who are under 21 years of age is prohibited at all times during the program.

See http://www.fortlewis.edu/administrative_services/flc_policies/04_human_resources/4-14.aspx and http://www.fortlewis.edu/administrative_services/flc_policies/11_college_other/11-2.aspx for full FLC policies.

Missed Assignments and Absences.

No makeup work is allowed without a documented and acceptable excuse (*e.g.* signed and dated medical note with contact information included). In the case of a documented and acceptable excuse, the instructor will accommodate missed course activities within reason. In this case, a suitable assignment will be given or else the grade will be determining excluding the missed work.

Religious Obligations: Conflicts with Scheduled Exams, Assignments or Class Attendance

I will make the effort to reasonably and fairly deal with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. If the conflict is legitimate, I will provide the opportunity for alternative time to submit an assignment.

Academic Honor Code

Your student manual contains information about the FLC honor code for students. In brief, you are expected to exhibit integrity in all aspects of this course. Documented dishonesty or inappropriate actions in this class will result in a 0 grade for the assignment in question and may be reported to the vice-president for academic affairs for further action.

Special Needs/Disabilities

Your instructor will work with you to accommodate special needs you may have due to a documented disability. Please contact your instructor as soon as possible before the program begins with these needs so that appropriate arrangements can be made to help you throughout the term. If you require special accommodations to fully participate in course activities or meet course requirements, you need to register with Disability Services, 280 Noble Hall, 247-7459. Please bring your letter of accommodation to your instructor as soon as possible.

<http://www.fortlewis.edu/disability/>