

NS100 and COBS Core Curriculum:

Finding the Green River Basin: Developing interdisciplinary knowledge in the sciences and outdoor leadership through placed-based exploration

Colorado College and Colorado Outward Bound School, Summer 2014

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COURSE DESCRIPTION

NS100 is an interdisciplinary course with a strong emphasis on place-based learning, field observations, integrated interpretations, and leadership/outdoor skills development. This course will be entirely off-campus and will follow the Green River from one of its mountain sources in the Uintah Mountains to its confluence with the Colorado River in Utah's canyon country, and beyond. The course is designed to build practical abilities in the use of the scientific method, integrative thinking, quantitative analysis, and effective communication; while also providing students an opportunity to build their skills in group leadership, backcountry living, risk management, river travel, and environmental education. We will emphasize integrated cross-disciplinary learning and the content will focus on interconnected lessons from the natural sciences, such as hydrology, geology, ecology, and climatology, with additional material from social sciences and artistic perspectives in our discussions. Such interconnectedness is crucial to the understanding of coupled human-natural systems that we will try to convey by the end of the class through place-based exploration of the Green River Basin, and will be useful for students pursuing degrees in any of the natural sciences and/or environmental studies. Field-based assessments will use maps, writings, oral presentations, and other methods to build effective written and verbal communication skills. Students will be evaluated on the basis of their ability to observe, analyze, interpret, and integrate observations in the field, as well as with traditional tests on their conceptual understanding of the interdisciplinary material and integrative frameworks. *This course is part of the larger CC Outdoor Leadership Institute, and upon completion students will meet the course requirements need to qualify as a Level II Backcountry Leader, and a Level II Rafting Leader, through CC Outdoor Education; additionally this course meets the CC requirements for an 'L' credit under the "Scientific Investigation of the Natural World with Lab" designation.*

Amongst whitewater expeditions, there are none more legendary than the original. One-armed Civil War veteran John Wesley Powell and his nine companions were the first intrepid explorers to boat the Green River and Colorado River through Utah and the Grand Canyon in 1869. He and his crew, using their surveying equipment, literally filled in the final blank spaces on the maps of the American frontier. This course will travel through much of the most exciting whitewater they encountered on their historic journey. The course will start with several days of mountain-based backcountry travel in the Uintah Range of northeast Utah, exploring alpine headwaters of the Green River. The course will then follow the Green River downstream through the Dinosaur National Monument, floating whitewater through Gates of Lodore, and into southeastern Utah. There we will finish the 24-day backcountry course with two additional river trips, one through the Labyrinth/Stillwater section of the Green River exploring Canyonlands National Park. From the confluence with the Colorado River, we will transition into the final week exploring the rapids and canyons of Cataract Canyon. You will run famous rapids like "Capsize" and "The Big Drops". You will make this journey in 16-foot paddle rafts. In short, this course is one of the most extensive and unique whitewater river experiences available anywhere. Students should expect a 24/7 course experience for the block; strong ties between students and instructors will be essential to a successful block of learning and fun that will cover all the requirements of an introductory course in the natural sciences, while also providing students an introduction to the world of river travel, backcountry leadership, and environmental education!

OVERALL OBJECTIVES

- Explore methods and concepts for interdisciplinary, place-based investigations of complex systems**
- Develop skills in outdoor group leadership, rafting-based backcountry travel, and risk management**
- Grow through application and self-reflection as an environmental educator**

COURSE DETAILS

Assessment & Grading

The grade for NS100 is based upon:

Participation (Active and Engaged!)	20%
Interdisciplinary and Creative Thinking Projects	35%
Celebrations of Knowledge (Exams)	20%
Fieldbook Entries	10%
Final Pedagogy Project	15%

What is meant by participation?

Obviously to get any participation points you must be present for the entire course. However, mere attendance is not enough. I expect that you will approach the learning sessions prepared and ready to actively participate (ask and answer questions). You need to be actively involved in hypothesis development and testing, particularly when developing questions at the numerous field sites we will visit along our journey.

Life and Learning in the Outdoors

Since this entire course is outdoor-based, be prepared for the weather and terrain. This course offers unique options for backcountry exposure to outdoor learning opportunities; because of this backcountry nature increased risk is inherent. Living and traveling in a remote wilderness setting exposes you to risks. COBS staff has extensive wilderness experience and risk management training to minimize the risk of the elements and activities in which we engage. However, exposure to risks enables insights and perspective unavailable anywhere else. The intent is not to avoid activities involving risk but to manage the inherent risk in those activities and to use it as a platform for developing character, leadership and compassion on a level on a deeper level than is accomplished in more modern, comfortable environments.

Travel within the Course

There will/can be a considerable amount of travel between the different sections of the course. We will be using Colorado College vehicles, Outward Bound vans, or professional charter companies to transport students. Because of the complex group management required for this course, **you will not be permitted to drive personal vehicles on the course.** Storage space will be limited, particularly when we are traveling, so pay close attention to the clothing and equipment lists and bring only what you need.

Required Clothing

See attached 'Required Clothing List' provided by COBS.

Learning Materials

A waterproof field notebook will be provided to you at the beginning of the course. This will be used for all assessment, and is essential for the successful completion of the course (so don't lose it!). Additionally, readings will also be provided during the course as field-ready handouts.

Responsible Conduct

CC - As members of the Colorado College community, all school policies regarding drug and alcohol use must be followed at all times. ALCOHOL, in any form, is NOT permitted in this course. Any breach of policy will result in referral to Student Life. *COBS* - Use of alcohol, tobacco or non-prescription drugs is absolutely forbidden on your course. These substances would not only detract from your performance on the course, but can create significant safety and health issues for all participants. If abiding by this rule creates problems for you, please reconsider your reasons for wanting to attend this course. Use of these substances while on course can result in your immediate expulsion from the course.

Colorado College Honor Code

Students are expected to uphold and adhere to the Colorado College Honor Code, in every respect, as is the case for all courses at CC. Your responsibilities include, but are not limited to, doing all of your own work on quizzes, exams, lab exercises, and papers, unless the instructions state otherwise for group activities and projects. In addition you must take care to acknowledge all sources of information you use in reports and write-ups (print literature; internet; and other). You can acquaint yourself with the Constitution of the Honor Code at <http://www2.coloradocollege.edu/academics/honorcouncil/Constitution.pdf>. It is the responsibility of the student to understand the terms of the Honor Code and to clarify ambiguous situations if they arise; so if you aren't sure, ask me.

COURSE SCHEDULE

Mountain Section - Uintahs

Days 1 – 7 in the Uintah Mountains, UT

Travel Description

In the mountains, you will shoulder your backpack filled with all the items necessary for mountain travel and camping. With the class, you will climb over high passes, attempt to reach summits, descend into lush, vegetated valleys with alpine streams, and work your way over rugged, rocky terrain, learning to rely on and help each other. The days can be long and difficult, and often require an “alpine start” to allow ample time to ascend and descend the summit or pass before afternoon thunderstorms appear. In this section, you will generally travel four to six miles each day, carrying all of your food and equipment in backpacks. The altitude and exertion present a challenge, but the magnificent views, sense of accomplishment, and increase in fitness are a few of many of your rewards.

Learning Plan

<u>Learning Activity</u>	<u>Learning Assessment</u>	<u>Specific Objectives Addressed</u>
Exploring Ecosystems in Complex Terrain	Lecture-based discussions, Student-teaching rotations	Ecology; Geology; Meteorology; Questioning, analysis, & interpretation skills; Knowledge of environmental processes & systems; Packing/fitting a backpack; Equipment care & use; Sanitation & hygiene; Cooking methods; Stove use & maintenance; Nutrition and ration planning; Shelter construction; Peak ascent; Travel techniques & planning; Lightening science & procedures
Geospatial Challenge!	Mapping; Hypothesis-based discussions	Introduction to the scientific method; Geography; Geology; Ecology; Geospatial observation/analysis; Map reading; Navigation and route finding; Compass use
Project: Green River Watershed from Source to Confluence: Headwater Systems	Observation-based discussions; Mapping	Hydrology; Ecology; Geology; Questioning, analysis, & interpretation skills; Knowledge of environmental processes & systems; Leave No Trace ethics; Campsite selection; Water purification
Introduction to Complex Systems	Reading-based discussions Celebration of Knowledge	Theory of place-based and problem-based knowledge; Coupled human-nature frameworks; Sustainable, resilient, and transformative systems; Interdisciplinary theory; Integrated knowledge creation; Knots; Systems thinking;
<i>Pedagogical Reflections:</i> Self-Awareness	Nightly fieldbook entries	Self-leadership/Self-authorship; Self-reflection; Metacognition; EE Portfolio; Intro to CC OE's <i>Summit</i> , achievement levels, & trip process; COBS leadership

River Rafting Section - Gates of Lodore

Day 8 – 11 Green River through the Gates of Lodore

Travel Description

Whitewater on the Green River begins at our course start where the river enters the imposing Gates of Lodore Canyon. Red sandstone escarpments rise up 2,000' above the river as it carves a 45-mile course of placid flat-water and raging rapids through three dramatic canyons—Lodore, Whirlpool and Split Mountain. This section of river is enclosed within Dinosaur National Monument, and you will be privileged to witness the towering cliffs as well as rock art from the Fremont Indians, who called these canyons home over 1000 years ago. While on the river, each day is spent learning to recognize and navigate various obstacles and hazards in the river, and how to anticipate the forces of the current from far enough upstream. You and your companions will work to become a team; coordinating your powerful paddle strokes and captaining your raft through Class II – IV rapids. Interspersed between the rapids are flat-water sections where there is a current, but no whitewater. At times, you will take advantage of this calm water to hone your skills and enjoy the view. Time in a raft is ideal for getting to know each other and forming boat pride, laughing your way downriver as you relax into the simplicity of river life.

Learning Plan

<u>Learning Activity</u>	<u>Learning Assessment</u>	<u>Specific Objectives Addressed</u>
Green River Watershed from Source to Confluence: River Hydraulics	Observation-based discussions;	Fluvial geomorphology; River hydrology; Knowledge of environmental processes & systems; Whitewater reading & navigation; Paddle strokes; Boat commands; Boat rigging; Pre-launch checks; Boat travel spacing & communication; Scouting techniques; River signals; Safe zone ID & use; River rescue skills
Mountain Building and our changing Earth	Group interpretations; Class discussion; Geologic mapping	Geology; Geography; Questioning, analysis, & interpretation skills; Knowledge of environmental processes & systems; Geospatial observation/analysis
Project: Rapid Rapid Assessment: Integrated Hazards and Risk Assessment	Interviews; Geospatial data analysis; Group discussions	Hydrology; Geomorphology; Questioning, analysis, & interpretation skills; Knowledge of environmental processes & systems; Risk management theory and models; Types of risks; Risk assessment; Hazard identification; Making assessments of self and others; Activity risk management planning
<i>Pedagogical Reflections:</i> Experiential Learning	Nightly fieldbook entries	Defining both experiential and environmental education; Pedagogical methods & process; Optimal learning zone; Creating a climate for EE; Knowledge of learners and learning / learning styles; Using teachable moments / Flexibility & responsiveness;

River Rafting Section - Desolation

Day 12 – 17 Green River through Desolation Canyon

Learning Plan

<i>Learning Activity</i>	<i>Learning Assessment</i>	<i>Specific Objectives Addressed</i>
<i>Project:</i> Green River Watershed from Source to Confluence: Water Resources / Exploring a Coupled Human-Natural System: Present	Reading-based discussions; Ecologic mapping; Hypothesis-based discussions; Additional mapping; Presentations	Hydrology; Ecology; Sociology; Questioning, analysis, & interpretation skills; Knowledge of environmental processes & systems; Intro to epistemology & ontology
Environmental Action, Litigation, Liability, and Communication	Lecture-based discussions; Creativity-based discussions; Celebration of Knowledge	Process of addressing environmental issues; Personal & civic responsibility; Environmental sensitivity; Cognitive psychology and communication theory; Self-expression skills, Listening skills, Feedback skills, Conflict resolution
<i>Project:</i> Exploring a Coupled Human-Natural System: Future	Reading-based discussion; Social surveys; Quantitative analysis; Hypothesis-based discussion	Climatology; Sociology; Ecology; Cognitive psychology and communication theory; Scientific literacy; Questioning, analysis, & interpretation skills; Knowledge of environmental processes & systems;
<i>Pedagogical Reflections:</i> Nuts and Bolts	Interviews; Qualitative analysis (interview question creation); Nightly field notebook entries	Sociology; Using Progressions; Facilitating; Debriefing; Inclusion & collaboration; Settings, tools, and resources for instruction; curriculum/course/lesson planning; Emphasis on education not advocacy; Ongoing learning & professional development

River Rafting Section - Labyrinth

Day 18 – 24 Green River through Labyrinth Canyon

Travel Description

For the next part of your expedition, you launch on the lower Green through Labyrinth Canyon. Though the river lacks whitewater in this section, it is a unique stretch of water in terms of scenery and cliff dwellings. Stillwater Canyon meanders between monumental sandstone formations such as Cleopatra’s Chair, Upheaval Dome, and Turks Head as it enters Canyonlands National Park. This is an area rich in artifacts and ruins from the Ancestral Puebloan culture, the same people who left signs of their once flourishing culture throughout the Four Corners area. You may make a number of stops to see remnants of their occupation of this area over one thousand years ago.

Learning Plan

<u>Learning Activity</u>	<u>Learning Assessment</u>	<u>Specific Objectives Addressed</u>
<i>Project:</i> Exploring a Coupled Human-Natural System: Past	Reading-based discussions; Timeline depictions	Sociology; History; Artistic perspectives; Ecology; Climatology; Scientific literacy; Verbal reasoning; Questioning, analysis, & interpretation skills; Knowledge of environmental processes & systems;
Leadership through Time: John Wesley Powell, John Muir, Rachel Carson	Lecture-based discussions	Qualities of leaders; Leadership styles; Motivation strategies; Followership; Decision-making strategies; Expedition mentality; Positive group culture; Valuing diversity; Stages of group development
<i>Pedagogical Reflections:</i> Envisioning your Future	Nightly field notebook entries	EE Portfolio; CC OE’s <i>Summit</i> , COBS leadership options; Self-leadership / Self-authorship; Metacognition
<i>Final Project:</i> The Ultimate Lesson Plan!	Summative Assessment	All Objectives