- SYLLABUS -

Institute for Visual Environmental Communication:

An interdisciplinary merger of science, art, and GIS to address climate change in the Colorado Rockies

EV120 & GIS Competency

Colorado College, Blocks A & B, Summer 2016

Instructors:

Zion Klos
zion.klos@gmail.com
Phone: 920-883-8617

Lucy Holtsnider
lholtsnider@gmail.com
Phone: 303-667-5550

GIS Instruction:

Jessica Badgeley
jessica.a.badgeley@coloradocollege.edu
Phone: 206-910-2992

GOALS, EXPERIENCES, & ASSESSMENTS

Interdisciplinary Course Description:

The Institute for Visual Environmental Communication is a two-block course with the goal of teaching the theory and best practices for communication of environmental issues through visual mediums. We will use place-based learning in the Colorado Rockies, spatial analysis techniques (Geographic Information Systems or "GIS"), and multiple visual art mediums (drawing, photography, graphic design, book-making, etc.) to inspire and create visualizations that can inform or invoke emotion regarding issues affecting our coupled human-natural environment. This year's institute focuses on the issue of climate change and its reflection locally in the Colorado Rockies. In addition to learning basic skills in GIS and visual art, we will also investigate interdisciplinary climate science and how the global phenomena translate into local issues and solutions. We will examine the science of how social-ecological systems function through time in a changing climate; focusing on which components and processes allow some to thrive and others to perish. To solidify understanding of complex environmental systems gained through on-campus learning and extended field excursions into the Colorado Rockies, students will collect primary scientific data, analyze existing datasets, and work towards the creation of environmental narratives that share the science and emotion of climate change with the Colorado public. The final project for the course will culminate in a class artists' book, online resources, presentation, and an exhibition of individual student work for the general public hosted at Colorado College. Overall, this course is designed to build skills in systems thinking, the scientific method, quantitative analysis, qualitative analysis, critical critique, and professional communication. Students will be evaluated on the basis of their ability to observe, analyze, interpret, and communicate environmental phenomena. The topics covered and skills gained through this interdisciplinary course will be useful for students pursuing degrees in any of the natural or social sciences, the arts, and those interested in environmental or regional studies. The course schedule includes three 5-day outdoor field trips to relevant cultural and artistic areas in the region, meaning camping and outdoor living will be a significant component (camping essentials provided as part of the course).

GIS Certificate Preparation:

Through this course students will be prepared to pass the ArGIS Desktop Entry 10.3 certification test, offered by ESRI (more information at: http://www.esri.com/training/main/certification/desktopEntry10-3). While the course does not require students to take the exam, our GIS instruction will be sufficient to prepare students to pass the certification exam. ESRI is the industry leader in spatial analysis, and entry-level certification will be a valuable addition to student resumes and prepare them for future spatial analysis in academic or professional settings.

COURSE DETAILS

Grading

The grade for the course is based upon:

GIS Practicums:	15%
Art Practicums:	15%
Discussion, Essays, and Class Participation (Active and Engaged!)	15%
Interdisciplinary Projects (x3):	30%
Final Project:	25%

What is participation?

Obviously to get any participation points you must attend (**attendance on the field trips is necessary for a passing grade!**). However, mere attendance is not enough. We expect that you will come to class prepared and ready to actively participate (ask and answer questions). You need to be actively involved in idea development and critique, and be prepared to address discussion prompts posed to the class throughout the course.

Practicum

A practicum is a component of a college-level course designed to build practical skills in a technique or topic area. Theoretically this course is structured around the science controlling the interactions of our coupled human-natural environments and how to best communicate this science and related issues to the public. Practically the skills we will focus on will be the ability to create visual maps and portrayals of the environment using GIS and a variety of common mediums from the Fine Arts. Your success in the practicums will be assessed on both 1) your effort given and 2) growth in your practical abilities through meaningful application of the skills gained.

Field Trips

We will be outside for much of the course, and will be camping as a class for 3 of the 7 weeks of the 2-block course. We will be car camping for this time, and will provide all the group camping equipment needed for cooking and living. Tents, sleeping bags, and sleeping pads are available to all students from the Colorado College Outdoor Center. You can use your own, or, we can help you acquire them well before we leave on the field trips. Since part of our time in the field will be in somewhat remote locations, will be asking detailed medical information from all students to ensure rapid support in case of injury or illness (Dr. Klos, though not a medical doctor, is a certified Wilderness First Responder with many years of wilderness leadership experience guiding and teaching around the western U.S. and Alaska). We will be using Colorado College vehicles to transport students. Because parking is limited at many of the planned field stops, **you will not be permitted to drive personal vehicles on the field trips.**

Supplies, clothing, and field expectations and concerns will be discussed in detail the first day of class. Below is a detailed packing list of required and suggested items for students. The better prepared you are the more comfortable you will be under the range of weather possible during the Rocky Mountain summer months.

For any conflicts related to meetings (i.e. family, religious holidays, or medical reasons)—see one of the instructors ASAP!

Detailed Packing List:

- Sun protection
  - Lightweight long pants and long sleeved shirt
  - Hat with a brim (perhaps a tie down for wind)
  - Sunscreen and SPF chapstick
- Rain gear (short but intense afternoon rains are likely)
- Hiking shoes/boots (plan for rough, steep terrain)
- Non-field footwear; all-terrain sandals or running shoes, etc.
- Many pairs of socks
- T-shirts
- Field pants (for tramping through brushy spots)
- Shorts (again, some be brushy)
- Complete set of warm layers: (snow is possible year round at high altitudes)
  - Pair of long johns
  - Pullover (wool or pile)
  - Wind or rain jacket
  - Warm hat
  - Light gloves
  - Insulated jacket
- Headlamp or flashlight, batteries if you read at night (rechargeable would be a good idea)
- Gloves (on here twice to make sure you bring a pair for cold mornings)
- Towel
- Swimwear (women: a sports bra and lightweight shorts can be good daily under-attire, to be ready to take advantage of water opportunities!)
- Personal first aid kit (allergy stuff, ibuprofen, etc.)
- Shampoo-soap-toothbrush-toothpaste, etc.
- Bandana
- Camping Gear (available from CC if needed)
  - Tent
  - Sleeping bag
  - Pad
  - Ground cloth or tarp
- Optional Items
  - Foldable chair (think Crazy Creek)
  - Gaiters (protects your lower legs so you can tromp through wet and cold terrain at record speeds!)
  - Vibrant and loud neon clothing/flare (so you can be easily spotted in the field!)

Office Hours and Requesting Additional Help

Instructors will be available to answer questions and provide support. On campus, feel free to call or e-mail during the day or evening to arrange a time to meet. We will try to be available at any reasonable hour to assist with projects and class work and we are happy to meet you or your group where you are working on-campus. Please direct GIS questions first to Jessica, art related questions first to Lucy, and climate, natural science, and communication theory questions to Zion. Zion can also help with overall questions or concerns about course logistics.

Late Work

Work will be accepted late, but a deduction in the assignment or project grade will occur. This can be waived in special cases where the student had pre-approval from the professor or when dealing with circumstances beyond their control (assuming the student made an effort to contact the professor as soon as they could).

Responsible Conduct

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.

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 us.

Guidelines for Acknowledgement of Literature and Internet Sources

Use of online sources for research and reading is encouraged—however students must take extreme care not to plagiarize and to scrupulously credit all internet sources with clear and obvious citations for diagrams and textual materials. To avoid plagiarism, present material learned from electronic sources in your own words, and cite the source of the material (guidelines for citation are below).

Presentations and documents should cite all sources on the page where the information appears, with the URL in small font at bottom of page. Complete list of website titles, URL, and date accessed should be provided in a list at end.

Written papers should cite (author, year) within the text, with full reference list provided at end of paper.

Citation of online resources should be in this format suggested by the American Chemical Society:

1. Uniform Resource Locators (URLs) for Web Pages

Format: Author, if available. Title of page as listed on the site. Address of page (date accessed).
Example: Lichtman, J.. American Chemical Society (ACS) Citation Style for Internet Sources. http://www.lv.psu.edu/jkl1/chem/citing.html/ (accessed Sept.2005).

2. Online Periodical Article

Format: Author(s), Year, Title of article. *Journal name*, volume (number), Digital Object Identifier. URL.
Example: Luyendyk B. P., Wilson D. & Siddoway C.S., 2003. The eastern margin of the Ross Sea Rift in western Marie Byrd Land: Crustal structure and tectonic development. *Geochemistry, Geophysics, Geosystems*, 4 (10), 1090, doi:10.1029/2002GC000462.

3. Spatial Datasets

Many spatial datasets have a DOI (a unique identifier) and can be cited in the same way as URLs above. Jessica will address more specific questions about spatial data citing protocols as they arise.

How to cite an image in a bibliography using MLA style:

Photograph from publication:

Last Name, First Name. *Photograph Title*. Year Created. Museum/Collection Name, City. Publication Information.

Photograph found online:

Last Name, First Name. *Photograph Title*. Year Created. Museum/Collection Name, City. *Website Title*. Medium. Date Accessed.

Personally taken photograph:

Last Name, First Name. "Photograph Title/Description." Year Created. Digital File Type.

COURSE SCHEDULE

Date		Topics	Assigned Readings, Deadlines, & Notes
		Block A, Week 1, On Campus	
Wed, June 1st	a.m.	Introductions, goals, expectations, teaching philosophies, certification options, and course framework (interdisciplinary overview)	
	p.m.	**Activity:** Look through ClimateOdyssey.org over lunch, come with questions to ask & individual student goals - Introductions cont'd	
Thu, June 2nd	a.m.	**Presentation:** Discuss art modules, process, sketchbooks, digital sketchbook **-** 2D non-photo environmental art Assign 2D environmental artist profile essay	**Pre-reading:** *- Zaria Forman TED talk*
	p.m.	**GIS Practicum:** Introduction to ArcGIS; Projections	
Fri, June 3rd	a.m.	**Discussion**: Environmental Art **Presentation:** 2D photo environmental art -Introduce Rocky Mountain Land Library **Project 1 – Land Library Map:** Project introduction	**Pre-reading:** *-Thornes, 2008, Rough guide to Environmental Art* *- Malcom, 2014, Eco-Aesthetics Introduction* *- Land Library NYT article*
		Block A, Week 2, Camping at Rocky Mountain Land Library	
Mon, June 6th	a.m.	Travel to the Rocky Mountain Land Library **Discussion**: Communication theory in context of environmental problems and solutions	*Depart at 9:00 am from classroom* **Pre-reading:** *- Center for Research on Environmental Decisions, 2009, Communication primer* - O'neill & Smith, 2014, Climate Change and Visual Imagery
	p.m.	**Discussion**: Introduction to the Rocky Mountain Land Library (Speaker: Jeff Lee, Director of Rocky Mountain Land Library) (?)	
	p.m.	**Discussion:** Science as Process: Introduction to the scientific method(s) and epistemic pluralism (**Falsifiable Hypothesis Activity**)	
Tue, June 7th	a.m.	**Art Practicum:** Observational Drawing & Landscape Photography	*Hike ridge*
	p.m.	**Falsifiable Hypothesis Activity:** Introduction to spatial data collection (orienteering, GPS systems, relative navigation)	
	7:00 p.m.	**Project 1 - Land Library Map:** Project brainstorming	
Wed, June 8th	a.m.	**Art Practicum:** Drawing Day 2 & Texture Photography	
	p.m.	**Project 1 - Land Library Map:** Spatial data collection	
	7:00 p.m.	**Dinner Discussion**: Nighttime Landscapes	
Thu, June 9th	all-day	**Art Practicum:** Drawing Day 3, Field trip to old trees with Erika?	*Hike near Buffalo Peak*
	7:00 p.m.	**Evening Discussion**: Erika Osborne lecture, questions	
Fri, June 10th	a.m.	**Project 1 - Land Library Map:** Data collection and art creation Drawing Day 4	***12pm: Check Sketchbooks***
	p.m.	Service Work & Return to CC	Return by 6:00 p.m.

Block A, Week 3, On Campus			
Mon, June 13th	a.m.	**GIS Practicum:** Digitizing, Georeferencing	*Meet in Lab*
	p.m.	**Art Practicum:** Introduction to Adobe Illustrator: Vector Images	*Meet in Lab*
Tue, June 14th	a.m.	**Art Practicum:** Introduction to Adobe InDesign**:** Composition and Typography	*Meet in Lab* ***2D Environmental Artist Profile Due*** **Pre-reading:** *- Craig, 2006, Designing with Type: The Essential Guide to Typography, 5th Ed., excerpt*
	p.m.	**Independent Work:** Project 1 – Land Library Map	*Meet in Lab*
Wed, June 15th	a.m.	**Art Practicum:** Critique Land Library Maps **Discussion**: Interdisciplinary theory in context of transdisciplinary environmental research	***Land Library Map due*** **Pre-reading:** *- Bartel, 2002, Successful Art Class Critique* *- Lang 2012, Transdisciplinarity Research in Sustainability Sci.* *- Balstad 2010, The Interdisciplinary Challenges of Climate Change Research*
	p.m.	**GIS Practicum:** Digital Data; Tables	*Meet in Lab*
Thu, June 16th	a.m.	**Art Practicum:** Collage and Color	***Check Sketchbooks***
	p.m.	**GIS Practicum:** Tables (cont'd); Buffering and Overlay	*Meet in Lab*
Fri, June 17th	a.m.	**Discussion**: Climate science - Holistic view, observed changes, local climate impacts and adaption, global mitigation **Project 2 - Global South Zine:** Exploring environmental vulnerability through art – Project Introduction	**Pre-reading <u>resources</u>:** *- IPCC, 2015, AR5 Synthesis Report, Section 4, tables* *- Klos et al., 2015, Indicators of Climate Change in Idaho* *- Klos et al., 2014, Extent of the Rain-Snow Transition Zone in the Western U.S. under Historic and Projected Climate*
Block A, Week 4, On Campus			
Mon, June 20th	a.m.	**GIS Practicum:** Raster Analysis, Terrain Analysis	*Meet in Lab*
	p.m.	**Presentation/discussion:** Zines Visit CC Zine Collection	**Pre-reading:** *- Zobl, 2004, History of Zines*
Tue, June 21th	a.m.	**GIS Practicum:** Interpolation, GIS Online (Publishing)	*Meet in Lab*
	p.m.	**Art Practicum:** Practice Zine scanning and layout in Adobe InDesign	*Meet in Lab*
Wed, June 22nd	a.m.	**GIS Practicum:** Cartographic Modeling	*Meet in Lab*
	p.m.	**Project 2 - Global South Zine:** Zine creation	*Meet in Lab*
Thu, June 23rd	all-day	**Presentation/discussion:** 3D Environmental Artists (Denver trip)	***Check Sketchbooks***
Fri, 24	a.m.	**Project 2 - Global South Zine:** Zine presentations	***Project presentations***

Block B, Week 1, Camping in Summit County Area			
Mon, June 27th	all-day	Travel to Summit County Area	*Depart at 9:00 a.m. from classroom.*
		Discussion: Introduction to Social-Ecological Systems (SES) **Outdoor Activity:** Resilience and transformation in SES (stability/instability under climate change)	**Pre-reading:** *- Walker et al., 2004, Resilience, Adaptability and Transformability in Social-Ecological Systems*
Tue, June 28th	all-day	**Project 3 - System Transitions Project:** Introduction to systems	
		Discussion: Qualitative vs. quantitative social-ecological data	
Wed, June 29th	a.m.	**Project 3 - System Transitions Project:** Data collection	
	p.m.	**Art Practicum:** Land Art & 3D Design	
Thu, June 30th	all-day	**Project 3 - System Transitions Project:** Data collection, synthesis	
Fri, July 1st	all-day	**Project 3 - System Transitions Project:** Detailed oral presentations and group SES synthesis discussion *Return to CC by Noon*	***Check Sketchbooks*** ***Project 3 due - presentations***
Block B, Week 2, On Campus			
Mon, July 4th	all-day	Independence!!!	
Tue, July 5th	a.m.	**Presentation:** Environmental artists' books **Assign 3D artist profile/communication theory essay**	**Pre-reading:** *- Evenhaugen, 2012, What is an Artists' Book?*
	p.m.	Visit special collections	
Wed, July 6th	a.m.	**Discussion**: Application of environmental communication theory to climate science	**Pre-reading:** *- Sheppard, 2005, Landscape Visualization and Climate Change*
	p.m.	**GIS Practicum:** Review & Certification test preparation (create individual study plans, schedule testing date [optional, $225])	*Meet in Lab*
Thu, July 7th	a.m.	**Discussion**: Art and politics (Guest Speaker: Corie Cole)	**Pre-reading:** *- Video: New School Panel Discussion: "How can art affect political change?"* *- Mayer, 2009, Art and Politics*
	p.m.	**Discussion**: Science, politics, and the advocacy spectrum	**Pre-reading:** *- Corner et al., 2014, Public Engagement with Climate Change: the Role of Values* *- Nisbet, 2009, Why Frames matter for Public Engagement*
Fri, July 8th	a.m.	**Final Project - Visualizing Colorado's Changing Climate (VCCC)**: Project introduction	***Check Sketchbooks*** *Assign project, send project profile worksheet*
			Essay due

Block B, Week 3, Camping at Rocky Mountain Land Library			
Mon, July 11th	a.m.	Travel to Rocky Mountain Land Library	*Depart at 9:00 a.m. from classroom.*
	p.m.	**Final Project - VCCC**: Proposal brainstorming and outreach strategy (incl. meta-cognitive discussion about process as learning tool)	Reading resources: *- ClimateWisconsin.com* *- ClimateOdyssey.org*
Tue, July 12th	a.m.	**Final Project - VCCC**: Proposal review (meetings with individual/sub-group(chapters))	***Final-project proposals due (hand written)***
	p.m.	**Final Project - VCCC**: Art creation and possible data collection (can travel)	
Wed, July 13th	all-day	**Final Project - VCCC**: Art creation and possible data collection (can travel)	
Thu, July 14th	a.m.	**Final Project - VCCC**: Art creation and possible data collection (can travel)	
	p.m.	Peer critique and Return to CC by 6:00 p.m.	***Final-project artwork due (initial draft)***
Fri, July 15th	all-day	**Final Project - VCCC**: GIS data analysis	*Time to revise artwork*
OVER THE WEEKEND **Final Project - VCCC**: GIS data analysis (Sat. and Sun. Lab Time)			
Block B, Week 4, On Campus			
Mon, July 18th	all-day	**Final Project - VCCC**: GIS map creation	*Time to revise artwork*
Tue, July 19th	a.m.	**Final Project - VCCC**: Class presentations (practice) and critique	***Due:*** ***-GIS maps (initial graded draft)*** ***-final version of artwork*** ***-practice presentation***
	p.m.	**Final Project - VCCC**: Revise (based on feedback)	***Final GIS maps and book pages due by 6 p.m.***
Wed, July 20th	a.m.	**Final Project - VCCC**: Publishing of work	*Print class books*
	p.m.	**Final Project - VCCC**: Public exhibition preparation	
	7:00 p.m.	**Final Project - VCCC:** Public exhibition and presentations	***Public presentations and exhibitions, location TBD***
Thu, July 21st	a.m.	**Discussion**: Distribution and wrap-up	*done by 11 a.m.*