

Syllabus - Spring 2019
The Art and Science of Field Notebooks and Metadata
Monday 2-4 pm 28 Jan – 11 March, & 6 May 2019
217 Berry Center

ZOO 5890-12; REWM 5620-02; GEOL 5200-02; BOT 5000-02; ECOL 5350

Instructors: Elizabeth Traver
2008 Agriculture Building C
traver@uwyo.edu; 307-766-5407
Office Hours: TBD or by appointment

Bethann Merkle
Bio Sci 16 (USGS Coop basement)
bmerkle@uwyo.edu; 307-766-6404
Office Hours: open door or by appointment

Inclusive Learning Community

In order to support your efforts, this course, including affiliated online spaces, supports an inclusive environment that respects the dignity of every person regardless of faith, heritage, sexual orientation or other expression of human identity and difference. In this learning community, we will welcome discourse and intellectual critique but reject harassment in all of its forms. As instructors, we have the right to dismiss you from the classroom, study sessions, electronic forums, and other areas where disruptive behavior occurs. If you have questions about how this works, how to contribute as a student to this approach to a learning community, etc., do feel free to reach out to us. We are happy to share what we know of for resources, etc.

Furthermore, the University of Wyoming's policy on classroom diversity is: "The University of Wyoming values an educational environment that is diverse, equitable, and inclusive. The diversity that students and faculty bring to class, including age, country of origin, culture, disability, economic class, ethnicity, gender identity, immigration status, linguistic, political affiliation, race, religion, sexual orientation, veteran status, worldview, and other social and cultural diversity is valued, respected, and considered a resource for learning.

Duty to Report

UW faculty and staff are committed to supporting students and upholding the University's non-discrimination policy. Under Title IX, discrimination based upon sex and gender is prohibited. If you experience an incident of sex- or gender-based discrimination, we encourage you to report it. While you may talk to a faculty or staff member, understand that as a "Responsible Employee" of the University, that member **MUST** report information you share about the incident to the university's Title IX Coordinator (you may choose whether you or anyone involved is identified by name). If you would like to speak with someone who may be able to afford you privacy or confidentiality, there are people who can meet with you. Faculty and staff can help direct you or you may find info about UW policy and resources at www.uwyo.edu/reportit. You do not have to go through the experience alone. Assistance and resources are available, and you are not required to make a formal complaint or participate in an investigation to access them.

Course Format

This course is designed as a hybrid discussion/workshop course, to enhance your ability to plan, execute, and document your own research efforts. Assignments will include some readings,

weekly field note entries, a detailed protocol, some small sketches. Some research suggests that writing notes on paper helps you learn and study better, and you will learn and practice analog techniques including sketching and writing notes by hand.

Course Overview

Most of the scientific knowledge that has driven discoveries was collected in field and lab notebooks. Such methodically kept records are equally significant today, but many students and research groups have relaxed their approach to these tools, or done away with them altogether. This hands-on course will introduce participants to the history of field notebooks and data collection protocols, including highlights of discoveries that were only possible thanks to written records of field observations. Students will practice foundational techniques including developing and refining data collection protocols, cataloging their own questions, basic field sketching skills, and more. This course will address handwritten and digital approaches to keeping field and lab notebooks and designing protocols, including protocols for safety and personnel matters such as conflict and harassment. Guest instructors, from campus units including WyGIS, ARCC, Geology library, Vertebrate Museum, etc., will contribute.

This course is intended to support and enhance the field and lab work you are doing or are planning to do. Coursework will be appropriate to the credit hours.

Student Learning Outcomes

- Better understand the importance of taking good lab/field notes
- Learn how to effectively use a field/lab notebook
- Learn how and where to store data and how to generate good meta-data
- Understand and value importance of a good protocol and how to write one
- Enhance your writing and visualization skills related to keeping a useful lab/field notebook

Course Materials

- *You!* Every class day, you will be responsible for engaging in class discussion as an informed, thoughtful, and respectful classmate. In order to get the most out of class, and to be a valuable addition to your classmates' experiences, please 1) come to class every week, and 2) arrive in class having engaged with the material assigned. Most importantly, strive to bring your enthusiasm, curiosity, and good will to class every day. But, we get it – life happens. We'll work together to mitigate.
- *Texts:* Required readings, lecture notes, etc., will be available on the WyoCourses website or via hard copies on reserve at Coe Library. Assigned "texts" may include a mix of peer-reviewed and popular writings, as well as multimedia (videos, podcasts, etc.). Brief written or visual reflections on the texts may be integrated into assignments, to stimulate your own metacognitive thinking about how you are applying the material. At a minimum, readings will include excerpts from the following:
 - a. Canfield, M.R., ed. 2011. *Field Notes on Science & Nature*. Cambridge, Harvard University Press.
 - b. Heinrich, B. 2006. *Life Everlasting: An Animal Way of Death*. ISBN: 9780544002265
 - c. Relevant peer-reviewed publications
- *Technology:* If you have a need or preference to use a digital device for note taking, etc., that's fine. Out of respect for everyone's privacy, audio or video recording in class is prohibited unless prior authorization is granted. Students whose excessive in-class use of electronic devices distracts themselves, other students, or the instructor will receive lower

participation grades, may be requested to leave the classroom, etc., as the situation warrants.

Course website

WyoCourses: <https://uwyo.instructure.com/courses/522546>. This site will be the primary portal for communication, including posting updated information or changes to the course. Class notes, supplemental reading, homework assignments, grades and feedback, etc. will be available here, so check it often (We recommend setting up WyoCourses to push notifications to your phone or email if something is posted).

Coursework & Attendance

Grading:

Participation	40%
Assignments	30%
Final Reflection	20%

Grade scale: Assignments and course grade are pass/fail. As a guideline, two or more absences or incomplete assignments may impact your grade.

Assignments

1. Notebook/Journal. We expect that you will keep a notebook/journal, on a weekly or more frequent basis, throughout this course. We recommend using unlined paper. Provided your writing is legible, you may use content from your notebook as assignment submissions. Scan or photograph the material and submit it embedded in a Word or PDF document. Options for the kind of notebook you maintain in this course: 1) a course-specific notebook/journal; 2) a notebook/journal you use for other kinds of note-taking, in order to integrate the course material fully into your work beyond this course.
2. Weekly assignments. These will be a combination of prep for the next class and reflection / other assignments informed by the class that we just had. One assignment will be focused on an audience beyond our classroom - the final reflection. See below for more details.
3. Final Reflection. During class on Monday, March 11, you will draft a self-analysis comparing your past and future notebook and metadata protocols and practices. For your final assignment, you will revise and refine that reflection as follows. Referring to the notebook/journal you have kept all semester should make this a fairly straightforward assignment.

Your reflection will be at least 250 words, and will address:

1. Why it would matter to a general (possibly non-expert) reader or citizen that you approach your note-taking the way you do;
2. Quotation and/or screenshot of your favorite published field note, incorporated into the text of your reflection;
3. What you used to do, before this class;
4. What you had hoped to get out of the class; and
5. What you've already implemented as a result of the class.
6. Optional: You may also opt to address what else you'd like to learn more about and/or practice, in order to further enhance your approach to field and/or lab notebooks.

Outlet: This self-analysis will be published on the public-facing course website/blog: www.engagelaramiescience.weebly.com/. This website hosts public-facing, regular updates from science communication course students, including projects in-progress, social media posts, reflections, plans, struggles, celebrations, etc. If you are interested in submitting other material to this blog throughout the semester and beyond, contact Bethann directly. If you want to learn about the back end of using a website, let her know! We can arrange for you to do that part, too.

It is possible that other work you submit to class will be appropriate for the blog. If it is, Bethann may invite you to publish it there. Apart from the final reflection, you will always have the option to indicate that you do not want your material to be shared publicly/published on the blog or used as an example in class.

Assessment: Depending on the stage of the writing process your reflection is in when you submit it, 2) it may be directly posted to the course website or 2) Bethann will collaborate with you to edit and refine it into a single-authored, polished piece which you can include in the Popular Publications section of your CV.

Component of Complete Blog Post	Complete
Image & image credit/attribution for each image. At least one is required.	√
Alt text for image(s)	√
Text (~100-300 words)	√
Byline (author attribution)	√
Quotation/screenshot of your favorite published field/lab note, incorporated into the text of the post	√

Attendance

We understand that life happens, and we are willing to be flexible in consideration of that. However, regular failure to complete assignments (informal or formal) and/or low investment or participation in class will be considered when assigning final grades. You are expected to turn in drafts of assignments on the dates they are due and to attend class weekly. Failure to submit assignments on time can result in a reduction in your grade on that assignment and/or in your final course grade. In extreme circumstances, failure to turn in assignments and/or participate in class can result in failure of the course. If you anticipate needing a deadline extension, please make such arrangements at least one week prior to the due date.

Submission Deadlines

Deadlines will typically be Fridays at 5:00 p.m.. This time/date provides time for us to review your submission before our next class. It also respects that you have other things to do with your time in the evenings and on weekends.

Coursework Submission

Submit files to WyoCourses as .doc, .docx, or .PDF files using the following naming style: YYYYMMDD_FirstLast_Assignment_1.



Date submitted Name Identify #s if submission
assignment has 2+ parts

Academic Integrity

Participating regularly in discussions and staying up to date on coursework is an important aspect of academic integrity. In addition, you must also follow UW's Academic Honesty Code (UW Regulation 2-114; bit.ly/uwyoreg-2-114), which prohibits acts of plagiarism.* The University of Wyoming is built upon a strong foundation of integrity, respect and trust. All members of the university community have a responsibility to be honest and the right to expect honesty from others. Any form of academic dishonesty is unacceptable to our community and will not be tolerated. Teachers and students should report suspected violations of standards of academic honesty to the instructor, department head, or dean. Regulations and other guidance can be found at:

<http://www.uwyo.edu/generalcounsel/support/clean%20uw%20regulations/UW%20Reg%208-30.pdf> and <http://www.uwyo.edu/AS/student-appeals/academic-dishonesty.html>.

The penalties for academic dishonesty can include, at our discretion, failure of the assignment or the course.

*Academic dishonesty means anything that represents someone else's ideas as your own without attribution. It is intellectual theft – stealing – and includes (but is not limited to) unapproved assistance on examinations, plagiarism (use of any amount of another person's writings, blog posts, publications, and other materials without attributing that material to that person with citations), or fabrication of referenced information. Facilitation of another person's academic dishonesty is also considered academic dishonesty and will be treated identically. Just as you cite written sources, you are expected to attribute images with the same diligence. If you have questions about how to credit and/or cite sources and images in your work, please do not hesitate to seek our assistance.

Support

Email, Staying in Touch, and Instructor Support

University of Wyoming data indicates students who seek additional support for their coursework tend to do better.

We will be actively engaged in your work throughout the course, in class and in response to assignment. We are also available for additional meetings during office hours or by appointment. We will provide regular feedback on your work, and we will bring in resources, suggest additional readings, etc., as we think you may find them useful.

We are willing to help if you're having any difficulty within or beyond the course, so please don't hesitate to schedule an extended meeting if you have questions, concerns, or difficulties with the class or beyond. We check email at least once per day, M-F, unless circumstances prevent doing so. Still, there are times when it may take a day or more to reply to your messages, so plan accordingly. Please check your email daily so you can stay abreast of any course updates.

Disability Statement

The University of Wyoming is committed to providing equitable access to learning opportunities for all students. If you have a disability, including but not limited to physical, learning, sensory or psychological disabilities, and would like to request accommodations in this course due to your disability, please register with, and provide documentation of your disability as soon as possible to, Disability Support Services (DSS), Room 128 Knight Hall. You may also contact DSS at (307) 766-3073 or udss@uwyo.edu. It is in the student's best interest to request accommodations within

the first week of classes, understanding that accommodations are not retroactive. Visit the DSS website for more information at: www.uwyo.edu/udss.

Campus Resources

- Student Assistance Programs and Services: www.uwyo.edu/dos/studentassistance/
- Academic Affairs: 766-4286, 312 Old Main, www.uwyo.edu/acadaffairs
- Counseling Center: uccstaff@uwyo.edu, 766-2187, 766-8989 (After hours), 341 Knight Hall, www.uwyo.edu/ucc
- Dean of Students Office: dos@uwyo.edu, 766-3296, 128 Knight Hall, www.uwyo.edu/dos
- Disability Support Services: udss@uwyo.edu, 766-3073, 128 Knight Hall, www.uwyo.edu/udss
- Student Welfare: www.uwyo.edu/dos/student-welfare/
- UW Police Department: uwpd@uwyo.edu, 766-5179, 1426 E Flint St, www.uwyo.edu/uwpd
- Student Code of Conduct: www.uwyo.edu/dos/conduct
- UW Science Communication Initiative: www.uwyo.edu/wysci

Data Science Club, RSO | 432 Ross Hall

Weekly meetings: Tuesday, 12:30-1:30. Consultation hours can be scheduled outside meetings. Join mailing list by emailing datascienceclubwyo@gmail.com.

EcolInfo Working Group | AG 316

Thursdays, 10-12. This drop-in is staffed by faculty and staff from WyGIS and INBRE. It is a great place to go to get support for visuals produced in, or relying on work done in, R. You can also get support for a lot of other aspects of informatics, working in R and other coding languages, etc.

UW Writing Center | 302 Coe Library

Helps writers at any stage of the writing process. With a focus on teaching and learning, the Writing Center is not a "fix-it shop," but they help writers identify, articulate, and implement improvements and corrections to their writing. You can drop in to see if a consultant is available and/or schedule an appointment online at <http://www.uwyo.edu/ctl/writing-center/>.

UW Oral Communication Center | 422 Ross Hall

Helps speakers at any stage of the presentation process, including prep for proposal presentations and thesis defenses. Not a "fix-it shop", but can help you practice responding to questions, identifying unclear aspects of presentations, etc. You can drop in to see if a consultant is available and/or schedule an appointment online at www.uwyo.edu/cojo/occ/.

Course Schedule

Subject to change; circumstances may alter the schedule. You are expected to check WyoCourses at least once a week. You should also ensure your WyoCourses settings are such that you receive all email updates from WyoCourses regarding this class.

Submit to WyoCourses by 5:00 pm, Friday, each week. See WyoCourses assignment page for details on each assignment.

Week	Topic	In Class	Assignments
Prep		<ul style="list-style-type: none"> Read "Why keep a field notebook?" Greene chapter in <i>Field Notes on Science & Nature</i> Anticipate that you will discuss this reading in class, in prep for writing a 250-word reflection. See assignment details here: https://uwyo.instructure.com/courses/522546/assignments/4530056 	
1-1/28	History and Discoveries	<ul style="list-style-type: none"> History and Discoveries associated with field notes Discussion of Greene, individuals' goals, syllabus, etc. 	<ul style="list-style-type: none"> Submit 250-word reflection on Greene's chapter. Watch/read 2 or more of the posted, short texts.
2-2/4	Drawn to Science	In-class workshop: introduction to field sketching basics, including historical art-science synergies. Class will also address images-as-data.	<ul style="list-style-type: none"> Submit 2-3 sketches of components of your research or field work. Submit ~250 word reflection on the readings and class discussion
3-2/11	Dealing with Data, part 1	Guests: <ul style="list-style-type: none"> Dylan Perkins, ARCC: DOI and related data issues 	<ul style="list-style-type: none"> Read Anderson (2017) "Why Ecology Needs Natural History" and the two pieces on the Grinnell method. Create an ORCID account. Written assignment: What is your data management plan? (See assignment page in WyoCourses for details.)
4-2/18	Dealing with Data, part 2	Guests: <ul style="list-style-type: none"> Beth Wommack: Vertebrate Museum Judy Pasek, Coe STEM Liaison Librarian: ORCID and Reference Managers 	Read these two blog posts about digital lab notebooks and backing up data. https://dynamiccecolgy.wordpress.com/2018/05/29/my-labs-new-lab-notebook-backup-system-part-1-the-backstory/

			<p>https://dynamicecology.wordpress.com/2018/05/30/my-labs-new-lab-notebook-backup-system-part-2/</p> <p>Select a reference manager, set it up, and describe how you do/will use it.</p> <p>Watch <u>two</u> videos from this site: https://uwmicrobiologycaption.weebly.com/videos.html Come to class ready to discuss how different students are experiencing the scientific process differently.</p>
5-2/25	Protocols, part 1	<p>Developing and testing your own protocols.</p> <p>Guests:</p> <ul style="list-style-type: none"> • Larry Schmidt, Geology Library: digital notebooks • Rachel Watson, Science Initiative Learning Actively Mentoring Program: protocols for both documenting science and creating an inclusive atmosphere in the lab 	<p>Submit the protocol you developed, based on discussion in class.</p> <p>Prep for Ellen Currano:</p> <ul style="list-style-type: none"> • 100-250-word reflection on your past experiences with field/lab safety protocols. • Read Clancy et al. (content warning: paper is a review of field harassment and abuse cases)
6-3/4	Protocols, part 2	<p>Guests:</p> <ul style="list-style-type: none"> • Ellen Currano, Geology: Developing field safety and anti-harassment protocols • Shannon Albeke and Samantha Ewers, WyGISC: Metadata 	<p>Based on what you learned from Ellen, draft and submit a field safety protocol for your field/lab work.</p> <p>Bring in your favorite published field note, to discuss and incorporate into final reflection.</p>
7-3/11	Looking ahead	<p>Wrap up of field notebooks and applying them to the field season</p> <p>Written reflection</p>	<p>Submit reflection</p> <p>Read Schroeter et al (2018) "Diverging from the Dogma: A</p>

			<p>Call to Train Creative Thinkers in Science". <i>Bulletin of the Ecological Society of America</i>. doi.org/10.1002/bes2.1463. Plan to discuss this reading on 5/6. If you cannot be in class, submit a reflection on this reading.</p>
8-5/6	Reflection	<p>Discuss Schroeter et al.</p> <p>Discuss how your protocols are working out, what your field note practices have been, application of other course concepts, etc.</p>	