Syllabus* for SUPER -- ESS 220: Research Skills for Ecosystem Science I
* Please note that the syllabus is a working document to keep the course adaptive, and that the most recent version will always be posted on Canvas
Fall 2020
Time: see me in Zoom!
Classroom: Pathology 101
Zoom: https://zoom.us/j/91348852163?pwd=eGo2VHZIelNMUSs0NnVHN2RrZmVSZz09 (this link will be the same for EVERY class)
Meeting ID: 913 4885 2163, **Passcode:** 2014

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Course Objectives. At the end of this course, students will be able to**:**
1. Demonstrate **professional skills** including time management, communication and other skills to connect with a mentor, and to increase productivity and success in research.

2. Use targeted library resources to conduct a focused **literature review** with the help of citation management software (e.g., Zotero), developing understanding of a topic and creating a useful **annotated bibliography**.

3. Form high quality **research questions** with testable hypotheses.

4. Apply the **components of good experimental design, methods and data visualization** to test hypotheses and answer research questions.

5. Appraise peer skills through high quality and constructive **peer review exchange**.

6. Feel confident developing a strong, confident and trusting **relationship with a research mentor**.

Book: Newport, C. (2016). *Deep Work: Rules for focused success in a distracted world*. Grand Central Publishing, New York, NY

Thinking forward:
- **Bring laptops, headphones/earbuds, and a paper and pen/pencil to EVERY class** (Please remain on-task!)
- Be ready to work on your own, in pairs, or in groups each class
- Check rubrics for every assignment
- Assignment due dates are *not* the 'do' dates… use time management skills to plan ahead. Most assignments are due Tuesdays, 11:59pm. Last call for instructor/TA assistance with assignments is Monday 5pm, giving us time to respond to you by Tuesday in-between our other responsibilities.
- For career-oriented advice, check out the WCNR Career Center: https://warnercnr.colostate.edu/career-services/

Schedule: Class will be held bi-weekly on odd-week Wednesdays 5pm *prompt* (Pathology 101), and simultaneously on Zoom via the above link. Recordings will be saved in the weekly module for 2 weeks. Assignments and readings are listed in the Weekly Agenda for the week they are due. Covid-19 could present unanticipated challenges to scheduling. Please be flexible and check Canvas regularly for announcements.

Weekly Agenda

In this agenda, the in-between (even) weeks indicate work that you should be doing toward your project. These are not weeks off, just weeks off of classroom meetings and due dates, so plan carefully.

Wk	Date	Topic	Readings, Assignments & Notes
1	Aug 26	**A: SUPER Program, Syllabus & Intros** **B: What is Science?** Research: The parts of a research project; Theoretical & empirical research; basic vs. applied research; quantitative vs. qualitative research.	**Assignments:** n/a **Readings & Annotations*:** 1. Platt 1964* 2. Holling & Allen 2002* 3. Berkeley "Basic vs. Applied Research"
		Work on your resume; List your broad goals of participating in mentored ecological research	
3	Sep 9	**A: Mentor Meet & Greet** ***at Sherwood Forest Amphitheater*** **B: Traits of a good mentee & mentor** We will discuss the outcome (data analysis) of our Google Form surveys!	**Assignments:** 1. Install Zotero citation management software; watch first 5 tutorials on website (~16min total) 2. Read project summaries provided by SUPER mentors. 3. Google Form: A. 10 qualities of a good mentee; B. 10 qualities of a good mentor **(due Monday 11:59pm)** 4. Work with your <u>group</u> to identify 2 potential problem scenarios or challenges. **Readings & Annotations*:** 1. Jensen 2016* 2. Hankel's 'Networking Tips for Scientists: The Psychology Behind Connecting' (web)* 3. Barber 2018 'The Psychology of Networking' (web)*
		Do some research on your new mentor and their team and research projects! Send a letter of introduction.	
5	Sept 23	**A: Time Management 101** – Tips and tricks for prioritizing what to do, and getting it all done! **B: Building Relationships:** Mentor Connection, Communication & Collaboration	**Assignments:** 1. What are your internal and external challenges related to time management? **Readings & Annotations:** ***HEAVY READING WEEK*** 1. Deep Work (Cal Newport, 2016) **BOOK*** 2. 'Building Relationships' Science Reading*
		Mentor Meetings: Research Preparation Packet: Setting Expectations, Research Title, Summary, Work Plan and 5 required readings.	
7	Oct 7	**A: Literature Search & Citation:** Finding, documenting, and citing information sources; Academic integrity and proper citation procedures and formats **B: Literature Evaluation & Documentation:** Literature reading and evaluation, summarizing and creating an Annotated Bibliography	**With Dr. Jocelyn Boice, CSU Libraries** **Assignments:** 1. Complete *Research Preparation Packet*: Mentor/Mentee expectations, Project Title, Project Summary, Work Plan and 5-6 required readings – full citations. **(DUE: Oct 13th)** **Readings & Annotations:** 1. Debunking Denialism (web) 2. Pain 2016a (web) 3. Pain 2016b (web)
		Begin annotating Readings for project AB, starting with mentor-assigned readings	
9	Oct 21	**A: Engaged Research Models:** Public Participation in Scientific Research (PPSR); Working with stakeholders; citizen science; outcome-driven research for impact; citizen science **B: Giving (and receiving) a skilled peer review**	**With Dr. Greg Newman & Sarah Newman, CitSci.org** **Assignments:** n/a **Readings & Annotations:** 1. Reid et al 2009* (evolution of models to support community and policy action with science) 2. Toomey 2016* (the gap between knowledge & practice) 3. Newman et al 2016* (the power of place in citizen science)

			4. Shirk et al 2012* 5. Fiske 1996 (web)
Initial SMART RQs; Annotate Readings for project AB			
11	Nov 4	**A: Forming SMART Research Objectives & Questions:** Identifying variables & their relationships; Defining your study/study area; Determining experimental design and research methodology **B: Forming & Visualizing Hypotheses**: Differentiating hypotheses from RQs; The value of visualization; Write a RQ for a figure exercise.	**Assignments:** 1. Draft AB with minimum 8 readings annotated due 2. Peer review of Draft ABs due (due Fri, 11:59pm) 3. Citizen Science Data observations entered into CitSci.org (by 10/31) and prepped for visualization; **Readings & Annotations:** 1. Rohit Pandey 2019, "Hypothesis testing visualized" (web) * 2. Nicole Martin 2018, "Data Visualization: How to Tell a Story with Data" (web)*
Refine RQs and form hypotheses with visualizations together with your mentor; Continue Readings for project AB. *Individual, scheduled **class and project check-ins** (10min individual meetings with your class lead).*			
13	Nov 18	**A: Ecological Field/Lab/Office Methods and Research Tools** **B: All Things Data:** Data Collection, Data Security, Data Management, Metadata, Data Analysis, Data Visualization	**Assignments:** Refined research question(s) and associated hypotheses with visualizations **Readings & Annotations:** n/a ***DEADLINE FOR ALL ASSIGNMENTS *WITH LATE PENALTIES****
FALL BREAK *Data Management Expectations for your project (software, formats, privacy, backups & other security details); Finalize Readings for project AB.*			
15	Dec 2	**Moving Forward:** How to take skills learned in the fall semester and apply them to research projects with mentors in the spring; Review of ESS 221 Syllabus, timeline and *Research Report* template.	**Today is the last class of the semester.** **Assignments:** Final AB with minimum 15 readings annotated **NEXT WEEK on Tuesday, December 8th, 11:59pm**

Assignments:

Homework assignments will be given throughout the semester. When assignments are graded, please carefully review the feedback, which will normally be based on a clear rubric. For many assignments there are opportunities for revision after draft assignments. Final versions have higher point values. Points will be deducted if assignments are turned in late, and late assignments will not be accepted after one week (10% off per day from overall grade). Most assignments are due the day before class, Tuesday 5pm. Canvas will be the forum for submitting all assignments. Unless otherwise specified, MS Word or PDF are the required format for assignment submissions. Class activities will often involve working in groups, and effort should be shared.

There are five key homework assignments/classifications.

1. **Readings and Annotations (25% total) – Individual work unless otherwise noted** – It is expected that all readings will be completed before class, and that you will come to class ready to discuss them or put them into practice. Save all references (even websites) in Zotero, and create a brief annotation in the notes that gives you a 2-5 sentence summary of the paper's key take-away messages – *this should NOT be a copy and paste from the abstract or text, but a thoughtful assessment in your own words*), plus either one question related to the reading or a relevance statement (see the assignments). Submit to Canvas. Each reading will count as 3 points, total points will be scaled to 25% of your grade. All readings are required, but required annotations are marked with a '*'. If you include annotations of additional readings, they will count as .5 extra credit point at the end of the semester.

2. **Research Preparation Packet (15%) – Individual Assignment**. You will meet with your mentor (together or separate) between Weeks 4-6 to complete this packet. These materials will help you to build your working relationship with your mentor, and will set the stage for your project and deliverables. The packet will have a signature page that your mentor has reviewed the materials and agrees that they represent your project. A template will be provided for all materials. This packet will include:
   a. A drafted set of expectations of mentee and mentor, signed by both.
   b. A draft project title.
   c. A summary of your research project. This will be written in first person with your mentor.
   d. Full citations for 5-6 mentor-suggested background readings relevant to your project to begin your annotated bibliography (the remaining 10+ annotations you will find on your own).
   e. A work plan of how your research project will be carried out from now through April, noting key project activities and SUPER timelines and milestones (this can change as needed!).
3. **Annotated Bibliography (25%) – Pair Assignment** – Each student pair will produce an annotated bibliography with guidance from their mentors to prepare for research. Work should be shared equally, and it is expected that both students will read all papers and contribute to every annotation. ABs must contain at least 15 high-quality references, and must use Zotero citation management software to save your documents. ABs will be completed using a template, and with guidance from your instructor, TA, mentor, classmates (peer review), the CSU Writing Center, and library staff as you need. The AB is your most important individual deliverable for this class (it is weighted accordingly), and sets the stage for success with your Spring research project. You will have two months to work on this, including a peer review with a classmate, review by your mentor, and submission of one draft for review and feedback before the final assignment is due at 5pm on *Tuesday FINALS WEEK (no class)*.
4. **Other in-class and out-of-class assignments (25% Combined)** - Vary as individual, pair or group.
5. **Participation & Leadership (10%) – Individual** – Ongoing (see below).

Grading: If you are unclear about expectations for any assignment, please contact the TA. ***Please be aware that when we give you feedback on assignments, you are expected to read it and make modifications to your future work.*** Our feedback is your opportunity to learn, and our standard for your academic growth. If you do not incorporate feedback and suggestions into your future work, your grade may be significantly affected. LATE POLICY: All assignments have clear timelines, associated rubrics to help you know and meet our expectations, and due dates to keep you on track to complete the semester. If you are facing hardship and need an extension on an assignment, please contact us by the Monday before the assignment is due. Late assignments will incur a 5% penalty per day up to 20% of the assignment value. Turn assignments in early to avoid technical difficulties at midnight, and send via email attachment as a last resort.

Grading scale:

Grade	Grade Percent	Grade points per credit
A+	97 – 100%	4.000
A	93 – <97%	4.000
A-	90 – <93%	3.667
B+	87 – <90%	3.334
B	83 – <87%	3.000
B-	80 – <83%	2.667
C+	77 – <80%	2.334
C	70 – <77%	2.000
D	60 – <70%	1.000
F	Below 60%	0.000

Participation and Leadership:
You should attend all classes, either synchronously or asynchronously, and arrive on time, participate as an individual as well as in groups. Classes build on each other and help to prepare you for research in the spring semester, so attendance is important. If you will be missing a face-to-face session, please notify the instructor and TA before class. *You will be expected to view any class recordings, make up any missed work and assignments, and to get important missed information from classmates*. Attendance will also be critical to your success in working with your mentor. All students can demonstrate attendance (no matter what mode) through participation and leadership in our class activities both on your own or as part of your pair or group.

Part of participation and engagement is <u>remaining present</u>, and not getting distracted by phones, social media, and course work for other classes, so phones and laptops should be put away at all times in the classroom, and only used for class activities (see us for accommodations). This is critical to a class atmosphere that emphasizes engagement, listening and respect. When online, please mute yourself unless actively contributing, and close email and alerts so you can focus on class and not disturb us all with noisy interruptions. We will deduct points if you are repeatedly found to be working on other things during our class time, as you are not engaged.

Canvas:
CANVAS is our repository for all course materials. Use the HOME PAGE as your starting point. Materials will be added throughout the semester, so check frequently. If you have any questions about grades or materials, ask right away. PowerPoint notes and videos will be made available for download, usually within 24 hours.

Modules:
This course will be set up in <u>15 Canvas modules</u>: TOPICAL MODULES, two per week (Modules 1-14), plus one PROJECT MODULE (Module 9) for project-related activities. The TOPICAL modules will include all content for each topic, two topics per week, which will be labeled A & B as listed in the weekly schedule for consistency. Modules will include an introduction, assignments, readings, and other materials. Module 9 will contain project-related assignments, so you need to keep a constant eye on Module 9 as you move through the semester.

Classroom & Research Etiquette:
- Please show respect to the class every week by arriving on time, and staying until the end of class. Please do not do email, text, engage in social media, or otherwise become distracted or distract your fellow students during class time. The same courtesies should be given to your mentor and research team.
- Email is a critical form of communication for this class, and will be for your mentors as well. Please check email frequently and answer emails in a timely fashion (within 24 hours, but earlier is better. Please recognize that we have families and lives outside of this class so may not respond in the evenings.).
- If you need to meet in person, please let us know in advance. Missed meetings may affect your course grade. Showing up on time is common courtesy and demonstrates professionalism.

Academic Integrity… and then some:
Academic integrity is of utmost importance in education. <u>It comes down to personal integrity, honesty and ethic.</u> Be true to yourself, represent yourself and present your own work. Give credit for the work or words of others (anywhere, anytime, for any reason!), or you will be cheating yourself out of an opportunity to grow and learn, and cheating your information source out of credit and recognition for their contributions to knowledge and science. CITE YOUR SOURCES. PARAPHRASE APPROPRIATELY.

This class is designed to help you to follow your curiosities in learning about our world by exploring ecological relationships that can reveal critical information to help with ecological sustainability, livelihoods, food and water security, climate adaptation, and other really important societal challenges. Go with it! Challenge

yourself! There are no limits placed on you in this class. I have a sense that many instances of academic dishonesty arise from lack of knowledge of plagiarism (we will take care of that!), poor long- and short-term planning, insecurity about asking questions, and looming deadlines. Planning will take you far in avoiding these circumstances.

If you need help planning or establishing routines, we will be working on some foundational skills early in the semester and I urge you to apply everything you learn in this class to all of your classes, your education overall, and other areas of your life. We all fall off the organization and enthusiasm wagon at times. But don't let this sway your academic integrity. Use your SUPER group as a support group. You'll be working together for a FULL YEAR and have the opportunity to form lasting friendships and the beginning of a professional network with your peers. Peer groups: respect your group members, their unique circumstances and challenges, and privacy. Be honest, sensitive and respectful in peer review and conversation.

Turnitin plagiarism evaluation software will be turned on for all writing assignments in this class. All references to published, online and verbal sources MUST be cited appropriately to give credit for intellectual contributions. Appropriate recognition and respect for the work of others is one of the skills that you will practice in this class and be expected to carry throughout your other classes and careers. This takes effort. Failure to maintain academic integrity may result in severe penalties.

CSU Honor Code:

As a student at Colorado State University, I recognize my active role in building a Campus of Character. This includes my commitment to honesty, integrity, and responsibility within the campus community. As such, I will refrain from acts of academic misconduct.

This course will adhere to the CSU Academic Integrity Policy as found on the Student' Responsibilities page of the **CSU General Catalog** and in the **Student Conduct Code.** At a minimum, violations will result in a grading penalty in this course and a report to the Office of Student Resolution Center.

Covid-specific Procedures to follow:
Important information for Students: All students should fill out a student-specific symptom checker each day before coming to class (https://covidrecovery.colostate.edu/daily-symptom-checker/). If you know or believe you have been exposed or are symptomatic, it is important for the health of yourself and others that you report it through this checker. You will not be in trouble or penalized in any way for reporting. If you report symptoms or a positive test, you will receive immediate instructions on what to do and CSU's Public Health Office will be notified. Once notified, that office will contact you and most likely conduct contact tracing, initiate any necessary public health requirements and/or recommendations and notify you if you need to take any steps. For the latest information about the University's response, please visit the CSU COVID-19 site (https://covidrecovery.colostate.edu/). Our class will be broadcast via Zoom, and recorded and posted on Canvas, offering options for attendance.

In addition:
- Remain at a proper distance from your classmates inside and outside the classroom. Be patient in transitions.
- Wear a mask, but NOT valve masks or single-layer gaiters, as these have been shown to not protect others.
- Disinfect your space BEFORE sitting down, and use your elbow to contain coughs
- Please be honest if you are contacted by contact tracers. This can help us to prevent spread of the virus.
- Respect the privacy of others, and let's take care of each other.