Description: Students will draw together the knowledge and experiences they have gathered in their undergraduate program to create a Capstone experience. This takes the form of a project which reflects the culmination of their degree and the work typical of their academic field of study. Students will identify a faculty mentor to supervise their project, which investigates a problem in animal or veterinary science, aquaculture, or a related field. The investigation may include scientific research in a laboratory, farm, or field site; literature review; meta-analysis; survey; design problem solving; or other hypothesis-driven testing. For this course, students are required to take their written experimental proposal from AVS 401 and develop it into a final research report describing their project, testing and assessment, and results. Students will also present an oral report to faculty and students. AVS 401 and 402 collectively serve as the Capstone experience for Animal and Veterinary Sciences students. This course fulfills a Writing Intensive requirement.

Credit hours: 2

Prerequisites: Senior Standing and ENG 315 or ENG 317; or instructor’s permission to take ENG concurrently

Mode of instruction: In-person course, or video conference course for off-campus students

Time: Synchronous

Digital services, Hardware, Software: Brightspace, Zoom

Instructional material: There is no required text for this class. Reading material will be provided as electronic journal articles or readings. Accommodations to class format or material available as needed.

Class format: Combination of lectures, class discussions, and open-ended time for activities. Students present their work in class at the end of the semester.

Course goals: The student will conduct a research project under the supervision of a faculty member, complete a written project report that will present the results or the end products, as well as present a report to faculty and students. Students completing the general education area of Capstone experience will be able to:

1. Synthesize knowledge, skills, and dispositions gained throughout the student’s major concentration of study.
2. Demonstrate competence within the discipline through professional conduct and, as appropriate, critical reasoning, analytical ability, and creativity.
3. Demonstrate effective communication skills.

Student learning outcomes and objectives to meet them:
At the conclusion of this course, student will have the skills to perform the following numbered tasks. Course objectives specific to each learning outcome are provided as lettered explanations.

1. How to find and assess the quality of scientific information.
   a. In assembling background information about their topic, students will learn how to perform a search of scientific databases, how to read scientific literature, and how to assess information for validity and generalizability.
b. In peer-reviewing other student research reports, students will learn how to peer-review manuscripts, including reviewing, editing, and scientific critique.

2. How to present scientific information.
   a. Students will learn how write a scientific project report, including how to format documents according to a pre-specified scientific format, how to incorporate instructor and peer-review comments and revisions, and how to progress the maturity of concepts and writing with each successive draft. (Writing Intensive objective)
   b. Students will learn how to present results, including graphs and statistics, accurately and in ways which promote scientific communication skills.
   c. Students will learn how to create an oral presentation of their report using software tools and present to a technical audience.
   d. In going from the research project proposal in 401 to the final project report in 402, students will learn how to address the ideas and objectives they “pitched” in their research project proposal which failed or which worked out differently than expected. Students can explain ‘next steps’ or what they would have done differently.
   e. In developing the written research report, students will learn how to build a citation database and use it to create relevant in-line citations and a bibliography.

Project selection:
Students choose a project in AVS 401, and presumably the work is ongoing during AVS 402 or has been completed. If projects have not progressed or have mitigating circumstances for why work has not been accomplished, adjustments to the project scope or mentor can be made. Specifics on choosing a project may be found in the syllabus for AVS 401.

Attendance policy: Students are expected to attend lectures, but it is understood that life often precludes this and that students may be performing field work or are located off-campus. Students may attend class virtually, through Zoom, which will be offered for each class. Students who will miss a significant number of classes, or who require additional accommodations, may contact me to make alternate arrangements.
   o Pregnancy, lactation, and parenting: I am happy to make accommodations for students based on pregnancy, lactation, and parental needs, as well as work with the Office of Equal Opportunities. Maine state and UMaine policy allows students to breastfeed in any space, including in class. If a lactation space is required, please contact E.O. for arrangements. Pregnant on Campus Initiative, pregnancy and parenting resources in Orono https://pregnantoncampus.studentsforlife.org/campus/umaine-orono/
   o Food insecure? Need clothes? Check out the Black Bear Exchange’s Food Pantry: https://umaine.edu/volunteer/black-bear-exchange/ or Old Town Crossroads Ministry.

Class participation: Students are expected to participate in discussions in class. I strive to create inclusive discussions, but if students still find it challenging to participate please notify me and I will alter the discussion format as needed.

Late Assignments: Assignments will be accepted after the deadline, but a 10% reduction in grade may be assessed. Assignments will not be accepted after the final exam slot for this class.

Classroom policy: Supporting inclusion and community is an active process that involves both invitation, and support to ensure that the learning community is and remains an equitable and inclusive place. Students are expected to conduct themselves in a professional and courteous manner, and abide by University policies.
**Campus Policies:** “The University of Maine is an EEO/AA employer, and does not discriminate on the grounds of race, color, religion, sex, sexual orientation, transgender status, gender expression, national origin, citizenship status, age, disability, genetic information or veteran’s status in employment, education, and all other programs and activities.” Follow the links for more information.

**Academic Honesty Statement***

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| 40 points total | **Project final paper** – The proposal in AVS 401 will form the basis of the final paper in AVS 402. You will build off the project proposal to create a final report in the style of a scientific report or research manuscript. Information on the structure and content of different types of project reports/manuscripts will be given in class but will include an abstract, a literature review/background on previously-published, relevant research, a methods section detailing the experimental approach, results (including photos, figures, graphs, tables), discussion and reflection, Information dissemination and outreach, and bibliography.

Two drafts of the paper will be submitted for review, with more specific directions on Brightspace. You will receive instructor and peer review feedback on the first draft but not on the final draft. Students are responsible for having their mentors read and provide feedback on their final draft prior to submission.

You must include at least: page numbers, in-line citations in the body of the proposal, a bibliography with consistent formatting, and section headers. A grading rubric will be on Brightspace.

**Students may opt to submit their final paper early. However, once it is graded by the instructor you may not opt to turn in a third draft/version.** |
| 15 points | **Peer review** – Students will perform one blind review (no student names visible) of another student’s research paper. Details on performing a review will be provided in class, but generally reviewers should comment on how well the information is presented: if the background material is relevant, if the scientific approach is laid out clearly, if the results are clearly presented, as well as spelling, grammatical, or formatting corrections. |
| 30 points | **Oral presentation** – you will be required to give a 20-minute oral presentation (~ 15 for the talk and ~ 5 min for questions) of your project and present to the class at the end of the semester. This will outline the portions of your written report, including the title, authors, background information, hypothesis, project objectives, methods, results, relevant impacts or outcomes, and any reflection on whether your hypothesis was correct or not, or whether your project was a success or not. Do not spend the entire time giving background information, and make sure to explain your methods and analysis. A grading rubric will be available on Brightspace. **Students may opt to give their presentation at any time during the semester, but you must give at least 1 week advance notice to schedule the class.** |

**Grading (out of 100 points):** A = 93–100; A− = 90–92; B+ = 87–89; B = 83–86; B− = 80–82; C+ = 77–79; C = 73–76; C− = 70–72; D+ = 67–69; D = 63–66; D− = 60–62; F = 0–59. The completion of both AVS 401 and 402 with grades of C minus or higher is required for graduation.
**Lecture schedule (D2x 1H15):**

<table>
<thead>
<tr>
<th>Day</th>
<th>Wk</th>
<th>No.</th>
<th>Title, Objective, Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>T 1/26</td>
<td>1</td>
<td>Intro</td>
<td>Introduction to the course, explanation of the syllabus and course expectations, finding course materials.</td>
</tr>
</tbody>
</table>
| T 1/26 | 1 | 1 | "Scientific writing: going from a proposal to a paper”  
Overview of formatting, content, and the scientific writing process. This includes learning to condense information, stacking citations, writing in third person, etc.  
➢ **Recommended Reading:** “Credit Where Credit Is Due: Respecting Authorship and Intellectual Property”  
➢ **Recommended Reading:** Watling_2017_tuning_your_writing  
➢ **Suggested Reading:** if needed, revisit l3_AVS401_reading_scientific_articles_2021 for the content of different sections of scientific articles, citation managers, and peer reviewing |
| R 1/28 | 2 | “The art of scientific figures”  
How to make graphs and figures that make sense. A brief overview of how to report statistics and format tables.  
➢ **Recommended reading:** Rougier_2014_10_rules_scientific_figures  
➢ **Suggested Reading:** if needed, revisit l7_AVS401_scientific_presentations_2021 for information on creating dynamic oral presentations |

**Weeks 2 – 7 we are not meeting. Depending on number of student presentations and availability, we may meet in weeks 8 and 9.**

| T 3/9 | 8 | (Optional) Presentations |
| R 3/11 | | (Optional) Presentations |
| T 3/16 | 9 | (Optional) Presentations |
| R 3/18 | | (Optional) Presentations |
| T 3/23 | 10 | Presentations |
| R 3/25 | | Presentations |
| T 3/30 | 11 | Presentations  
➢ **Assignment due (20 pts):** The first draft of your paper is due. Submit via Brightspace  
➢ **Assignment (20 pts):** Peer review, each student will be assigned another student’s final paper to review. Due in three weeks, submit via Brightspace. |
| R 4/1 | | Presentations |
| T 4/6 | 12 | Presentations |
| R 4/8 | | Presentations |
| T 4/13 | 13 | Presentations |
| R 4/15 | | Presentations |
| T 4/20 | 14 | Presentations  
➢ **Assignment due:** Peer review. Submit via Brightspace. |
| R 4/22 | | Presentations |
| T 4/27 | 15 | Presentations |
| R 4/29 | | Presentations  
➢ **Assignment due (20 pts):** The final draft of your paper is due, via Brightspace |