BIOL F400
Capstone Project
Fall 2017, 0 credits, CRN 74215
Prerequisites: Junior or Senior Standing

Overview
All undergraduate students in the Biological Sciences major are required to complete a capstone project prior to graduation. The capstone project is a mentored research project on a biological topic to be completed in the junior or senior year. The capstone project must be designed or chosen by the student in consultation with a faculty mentor. The faculty mentor must approve the project before work begins. The project must include evaluation of data and communication of the study intent, methods, results, interpretation, and conclusion in the context of existing literature and knowledge. The capstone project may be conducted within a designated biology or wildlife course (see the catalog for a listing) or through more individualized study with a faculty mentor, either for credit (e.g. BIOL 490, BIOL 397 or 497, URSA 388 or 488) or not for credit.

BIOL F400 is not a traditional course. There are no class meetings or assignments, and no credit will be provided upon its completion. Think of this course as an accounting tool. Enrolling in BIOL F400 signals to the Department of Biology & Wildlife and the UAF Registrar that you are planning to undertake a capstone project in the current semester. It is a way for us to track which students are in the process of completing their capstone projects, and which have successfully completed a project and therefore have satisfied the capstone requirement for graduation. A tracking system is necessary because the capstone can be completed in such a variety of ways.

A capstone project might extend across several semesters, or an initial project may be abandoned in favor of a new one. In these cases, there is no need to register for this class repeatedly. If the capstone project is not completed, or not completed satisfactorily, within a semester, the BIOL F400 grade will be deferred until a later semester (see Assessment section, below).

Course Coordinator
Diane Wagner
Undergraduate Program Chair: Biological Sciences
Office hours Tues 2-4pm in 260 Arctic Health Research Bldg
diane.wagner@alaska.edu

Catalog Course Description
This course should be taken by students during the semester they initiate a capstone research project. The capstone project may be completed within a designated course or by working individually with a faculty mentor; see the Biological Sciences program description for more information. The duration of the capstone project may exceed one semester.

Prerequisites
Junior or senior standing
Goals and Learning Objectives

The broad goal of the capstone project is to integrate knowledge and skills learned in previous courses, including scientific knowledge, quantitative literacy, and communication skills, and to apply these products of the university education to a creative activity. For a biologist, a fundamental expression of applied knowledge, creativity, and critical reasoning is to engage in scientific inquiry.

The learning objectives of the capstone project are as follows:

1. Learn through experience to pose and test biological hypotheses
2. Employ critical thinking by evaluating the scientific literature in the subject area
3. Apply and enhance quantitative knowledge by analyzing and interpreting data
4. Apply and enhance communication skills by writing and presenting original scientific findings

Pathways to a Capstone Project

There are two main ways to complete a capstone project, detailed below.

1. Complete a project within a designated capstone course

A student may perform a capstone project within a designated capstone course in Biological Sciences. Capstone courses are offered across a range of sub-disciplines within biology. A list of capstone courses in Biological Sciences can be found in the UAF catalog.

All designated capstone courses include as part of their expectations that the student will complete a biological research project suitable to meet the expectations of the capstone requirement. Typically, the instructor will introduce one or several model study systems and methodologies that will form the basis for the student's project. The instructor will assist the student to design a study and analyze the results. For projects started in Fall 2017 or later, three components are required and assessed.

Note that the capstone project is typically only a portion of the work assessed within a designated capstone course. As a result, it is possible to pass the course and not pass the capstone, and vice versa.

The instructional methods and policies employed in designated capstone courses vary; please refer to individual course syllabi.

2. Complete a project by working individually with a faculty mentor

Alternatively, a student may satisfy the capstone requirement by conducting a research project with a faculty mentor, typically a member of the UAF Biology & Wildlife Department. A student may receive course credits for the research project by enrolling in independent study (BIOL F397 or F497) or undergraduate biology research (BIOL F490 or URSA F388 or F488); however, course credits are not necessary for completion of the capstone project requirements. A more informal arrangement, in which the student performs and communicates a project under the supervision of a member of the Biology & Wildlife faculty or completes research in the context of an internship, may satisfy the capstone requirements as well.

If the research mentor is not a member of the Biology and Wildlife faculty, then an additional evaluation by an appropriate member of the Biology and Wildlife faculty must be provided, in addition to the research mentor's evaluation.
In order to get credit for a passing project, students working individually with a mentor should submit to the Biological Sciences Program Chair (diane.wagner@alaska.edu) the following items before the date that grades are due:

- The completed evaluation form, signed by the evaluator(s)
- A clean copy of the final paper

**Requirements of the Capstone Project**
The expectations and assessment of the capstone project are the same regardless of whether the capstone is completed within a designated course or by working individually with a faculty mentor.

For projects started during the Fall 2017 semester and later, three items are required:

1. A major written assignment, which may take the form of a research proposal and/or a final report formatted as a scientific paper. Written assignments should have a minimum length of 8 double-spaced pages (excluding figures and references) and contain at least 10 relevant references.

2. The rationale, approach, and findings must be communicated in an oral presentation, which can be delivered as a speech or a poster presentation. The presentation may occur within any of a variety of venues, including a class, UAF Research Day, or an academic or professional meeting.

3. The project rationale, approach, and findings must be communicated in a short non-technical summary, written in such a way that it can be understood by a non-scientist. The length of the non-technical summary will typically be one paragraph, and should be no longer than one single-spaced page in length.

All capstone projects are assessed using a standard evaluation rubric, which is reproduced at the end of this syllabus. **A student must score “adequate” or above on all aspects of the evaluation in order to earn a passing grade on the capstone project.** Note that if the research mentor is not a member of the Biology and Wildlife faculty, a second evaluation must be obtained from a Biology and Wildlife faculty member.

**Assessment of the BIOL F400 course**
At the end of each semester, the program chair will query the instructors of designated capstone courses and faculty mentors to determine whether students enrolled in BIOL F400 passed the capstone project, and will post grades for BIOL F400 accordingly. There are three possible grades for the BIOL F400 course, explained in the table below.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Interpretation</th>
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<tbody>
<tr>
<td>P</td>
<td>Pass - Indicates that the student earned a score of &quot;adequate&quot; or above on all points detailed on the capstone project evaluation rubric</td>
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<tr>
<td>DF</td>
<td>Deferred - Indicates that the student did not complete or pass a capstone project in the current semester. For example, the DF grade would be given if the project spanned more than one semester, or if the student did not receive “adequate” or above scores on the capstone evaluation form. When the student does pass a capstone project, the DF grade will convert to a P.</td>
</tr>
<tr>
<td>F</td>
<td>Fail – Under ordinary circumstances, a DF grade will convert to an F only if it remains on the record for more than 3 years. This conversion can be prevented by request if the student can demonstrate she or he is still actively working to complete the project.</td>
</tr>
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**Academic Code of Conduct**

All students are expected to be familiar with the UAF Student Code of Conduct (available online and in the UAF Catalog) and to follow it at all times. Academic dishonesty will not be tolerated. Acts of academic dishonesty will result in at least a failing grade for the current capstone project but may also result in more severe consequences, including expulsion from the University. Violations of the Code of Conduct will be reported to the UAF Dean of Students. Acts of academic dishonesty include, but are not limited to, the following.

- Plagiarism (see below)
- Cheating
- Obtaining an extension on an assignment or permission to miss a class through false pretenses
- Turning in an assignment that was prepared for a different class, unless you have received permission to do so
- Falsifying grade records

**Plagiarism** is the use of someone else's ideas, text, or graphics without acknowledging the source. Plagiarism is a serious form of academic dishonesty. Examples include the following.

- Copying text verbatim from a print source, including websites, books, reports, or articles, whether published or unpublished, without quotation marks and attribution
- Changing a few words within a copied block of text to obscure its resemblance to the original
- Presenting a graph or table created by someone else in a written document without attribution
- Presenting someone else's data without attribution
- Presenting someone else's ideas as your own without attribution

**Support Services**

**Computer software** - The UAF Office of Information Technology provides access to computer programs that may be useful for analyzing and graphing data (JMP, Microsoft Excel).

**Writing Center** – The Writing Center can provide critical feedback on student writing: 801 Gruening, 474-5314.

**Disabilities** - The Office of Disability Services implements the Americans with Disabilities Act (ADA) and ensures that UAF students have equal access to the campus and course materials. The instructor will work with the Office of Disability Services (208 Whitaker, 474-5655) to provide reasonable accommodation to students with disabilities.

**Title IX Protection**

University of Alaska Board of Regents have clearly stated in BOR Policy that discrimination, harassment and violence will not be tolerated on any campus of the University of Alaska. If you believe you are experiencing discrimination or any form of harassment including sexual harassment/misconduct/assault, you are encouraged to report that behavior. If you report to a faculty member or any university employee, they must notify the UAF Title IX Coordinator about the basic facts of the incident.

Your choices for reporting include:
1. You may access confidential counseling by contacting the UAF Health & Counseling Center at 474-7043;
2. You may access support and file a Title IX report by contacting the UAF Title IX Coordinator at 474-6600;
3. You may file a criminal complaint by contacting the University Police Department at 474-7721.
**Final Evaluation of Biological Sciences Capstone Project**

### I. Written report

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<th></th>
<th>Date:</th>
<th>Student's Name:</th>
<th>UAF ID#:</th>
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<tr>
<th></th>
<th>Project Title:</th>
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<th></th>
<th>Research Project Supervisor:</th>
<th>Reviewer:</th>
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</table>

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<tr>
<th></th>
<th>Yes (excellent)</th>
<th>Somewhat (adequate)</th>
<th>No (inadequate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Is the capstone project the product of data collection and/or analysis by the student?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2.</td>
<td>Does the capstone paper make a compelling argument for the significance of the student’s research within the context of the current literature?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3.</td>
<td>Does the capstone paper clearly articulate the student's research goals?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4.</td>
<td>Are the methods appropriate given the student's research agenda?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5.</td>
<td>Is the data analysis appropriate and accurate?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>6.</td>
<td>Does the author interpret the results skillfully and accurately?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>7.</td>
<td>Are the tables and figures clear, effective and informative?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>8.</td>
<td>Is there a compelling discussion of the implications of findings?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>9.</td>
<td>Is the literature review appropriate and complete?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>10.</td>
<td>Are the citations presented consistently and professionally throughout the text and in the list of works cited?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>11.</td>
<td>Is the writing appropriate for the target audience?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>12.</td>
<td>Is the paper clearly communicated and free of language errors?</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Reviewer signature: ________________________________
II. Oral Presentation

Date of presentation:

Circumstances of presentation (e.g. class presentation, Research Day poster presentation, conference oral presentation):

Assessment of presentation quality:

<table>
<thead>
<tr>
<th>Excellent</th>
<th>Adequate</th>
<th>Inadequate</th>
</tr>
</thead>
</table>

Comments on oral presentation:

III. Non-technical summary

Date:

Assessment of non-technical summary quality:

<table>
<thead>
<tr>
<th>Excellent</th>
<th>Adequate</th>
<th>Inadequate</th>
</tr>
</thead>
</table>

Comments on non-technical summary:

Reviewer signature: ______________________________