

Capstone Project in Biological Sciences – Fall 2017 and later¹

The guidelines below apply to all students initiating a biological sciences capstone project during Fall 2017 or later. The two most important changes from earlier guidelines are as follows. (1) In addition to writing a paper, all students must deliver an oral presentation summarizing the content of their capstone project. (2) All students must prepare, in addition to the formal written report, a non-technical summary describing the project. Details follow.

I. What is the capstone project requirement in Biological Sciences?

The intent of the Biological Sciences capstone project is to integrate knowledge and skills learned in previous courses, including scientific knowledge, quantitative literacy, and communication skills, and 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 capstone project in Biological Sciences consists of a mentored research project on a biological topic that is completed in the junior or senior year.

A capstone project must fit this description:

- The project must be chosen by the student in consultation with a faculty mentor.
- The faculty mentor must approve the project before work begins.
- The project must include the evaluation of data. In most cases the student will collect an original data set, but working with an existing data set is also acceptable.
- The rationale, approach, and conclusions must be communicated in three ways:
 1. A formal written report in the style of a scientific paper
 2. A separate, short, non-technical summary of the project goals and outcomes, written for the public
 3. An oral presentation of the study goals and outcomes

All capstone projects are assessed using a common set of expectations (see Final Evaluation of Capstone Project). **All criteria listed on the evaluation form must be marked as "adequate" or better for the student to obtain credit for a capstone project.**

Students pursuing a BA in Biological Sciences are encouraged to incorporate aspects of social science or humanities into their capstone project.

II. How to satisfy the capstone requirement

The capstone project requirement may be met in one of two ways.

1. Take a designated capstone course. A student may perform a project within a designated capstone course in Biological Sciences or Wildlife Biology and Conservation. Capstone courses are offered across a range of sub-disciplines within biology. A list of capstone courses in Biological Sciences may be found on the Biology & Wildlife website (<https://www.bw.uaf.edu>) and in the UAF catalog. All capstone courses include the expectation that the student will complete a biological research project. Typically, the capstone course instructor will introduce one or several model study systems and methodologies that will form the basis for the student's project. The course instructor will assist the student to design a study and analyze the results. **The capstone**

¹ Ratified by faculty April 2016

requirement within a course will be fulfilled only when all criteria of the capstone project itself is evaluated as adequate or better on the Final Evaluation of Capstone Projects rubric. It is expected that the capstone project will constitute only a portion of the course grade. **Thus, it is possible for a student to pass a capstone course without receiving credit for the capstone project, and to receive credit for the capstone project without passing the course.** When the student has successfully completed the project, the instructor will provide the Biology and Wildlife Department with a copies of the evaluation forms and the written assignments (the formal paper and the non-technical summary), to be archived by the department.

2. Work individually with a faculty mentor. A student may satisfy the capstone requirement by conducting a research project individually with a faculty mentor, typically a member of the UAF Biology & Wildlife faculty. A student may receive course credit for the research project by enrolling in individual study (e.g. BIOL F397 or F497), and these credits may be applied to the student's degree requirements; however, course credits are not necessary for completion of the capstone project. When the student has successfully completed the project, the student or research mentor should provide to the Biology and Wildlife Department a copy of the final paper and a copy of the Final Evaluation of the Capstone Project form, signed by the research mentor. **If the mentor is not a member of the Biology and Wildlife faculty, an additional faculty evaluation completed by a member of the [Biology & Wildlife faculty](#) will be necessary.** Students pursuing a capstone research project through individual mentoring must submit a [mentoring agreement](#) form to the Biology and Wildlife Department or the BIOL 400 Biological Sciences Capstone Project instructor (see below) within a few weeks of initiating the project.

III. The capstone requirements in more detail

1. **Written report** - All capstone projects must include a written assignment. This is typically a final report expressing the study goals, methods, findings, and conclusions written as a scientific paper, but may in some cases be a research proposal. It is recommended that written assignments are at least 8 double-spaced pages (excluding figures and references) and cite at least 10 relevant references.
2. **Non-Technical Summary** - Communicating scientific results to the public is an important aspect of research. In addition to the formal written report, capstone research findings must be communicated in the form of a short, non-technical summary. The summary should consist of one or two paragraphs (1 page single spaced maximum) encapsulating the goal, approach, and findings of the study in language that could be understood by a non-scientist.
3. **Oral presentation** - The findings of all capstone projects must also be communicated orally. Oral presentations may be delivered in class, at a scientific conference, at UAF Research Day, or in another instructor-approved setting. Digital slide presentations and poster presentations are the most common forms of oral presentation.

IV. Students intending to complete their capstone should register for BIOL F400

Regardless of how the capstone project is completed (within a course or by working individually with a mentor) students must signal the intent to initiate a capstone project by enrolling in BIOL F400, Capstone Project. BIOL F400 is not a traditional course. It costs nothing, confers no credit, and requires no additional work on the part of the student. Rather, it is a way for the biology department to track which students are in the process of completing their capstone projects, and which have successfully completed a project and therefore satisfied the capstone requirement for

graduation. A tracking system is necessary because the capstone can be completed in 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 BIOL F400 repeatedly**. If the capstone project is not completed, or not completed satisfactorily, within a semester, the BIOL F400 grade will be deferred (DF) grade until a later semester. The DF will be changed to P when the student passes the capstone project. 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 actively working to complete a project.

The BIOL F400 syllabus can be found on the Biology & Wildlife [website](#).

Catalog description:

BIOL 400 Capstone Project

0 Credits Offered Fall and Spring

*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. (0+0)***

If you have questions about the capstone project or BIOL 400, contact the Biological Sciences Department Chair, diane.wagner@alaska.edu.