

Submit original with signatures + 1 copy + electronic copy to Faculty Senate (Box 7500).
See <http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures/> for a complete description of the rules governing curriculum & course changes.

TRIAL COURSE OR NEW COURSE PROPOSAL

SUBMITTED BY:

Department	Biology & Wildlife	College/School	CNSM
Prepared by	Barbara Taylor	Phone	474-2487
Email Contact	betaylor@alaska.edu	Faculty Contact	Barbara Taylor

1. ACTION DESIRED

(CHECK ONE):

Trial Course

New Course

2. COURSE IDENTIFICATION:

Dept

BIOL

Course #

F488

No. of Credits

2-4

Justify upper/lower division status & number of credits:

This course offers opportunities for student research in advanced life sciences topics beyond typical undergraduate course offerings. Discipline-specific knowledge equivalent to Junior standing or higher is assumed. This expectation justifies this course as upper division/junior level. Enrolled student are required actively participate in life sciences research with a faculty mentor, present their work in poster format and turn in a progress report at the end of the semester. Research areas range across all life sciences subjects (evolution, ecology, physiology, cell biology, biochemistry, molecular biology etc). Credits are assigned at the beginning of the semester when students enroll, but may be subject to change as the result of consultation between the student and professor. Two-credit BIOL 488 is reserved generally for introductory literature or archival research or small projects. In general, 3 credits provide an absolute minimum amount of time to accomplish a novel project; 4 credits may be appropriate if the student has a large ongoing project with plenty of available time. Six credits of 488 are acquired by students who enroll in 488 in multiple semesters. Each credit of 488 corresponds to an average weekly minimum of 3 hours working productively in the archive/field/ laboratory, plus 1-2 hours additional work on the project (planning, interpretation, notebook writing and background reading).

RECEIVED

SEP 20 2012

Dean's Office

College of Natural Science & Mathematics

3. PROPOSED COURSE TITLE:

Research Experience in Biology

4. To be CROSS LISTED?

YES/NO

No

If yes, Dept:

Course #

(Requires approval of both departments and deans involved. Add lines at end of form for such signatures.)

5. To be STACKED?

YES/NO

No

If yes, Dept.

Course #

6. FREQUENCY OF OFFERING:

Fall and Spring semesters

Fall, Spring, Summer (Every, or Even-numbered Years, or Odd-numbered Years) — or As Demand Warrants

7. SEMESTER & YEAR OF FIRST OFFERING (AY2011-

12 if approved by 3/1/2012; otherwise AY2012-13)

Fall 2013

Leah Berman
9/21/12 TLP

Governance
10/3/12 TLP

8. COURSE FORMAT:

NOTE: Course hours may not be compressed into fewer than three days per credit. Any course compressed into fewer than six weeks must be approved by the college or school's curriculum council. Furthermore, any core course compressed to less than six weeks must be approved by the core review committee.

COURSE FORMAT: (check all that apply) 1 2 3 4 5 6 weeks to full semester

OTHER FORMAT (specify) _____

Mode of delivery (specify lecture, field trips, labs, etc) **Lecture and faculty mentorship**

9. CONTACT HOURS PER WEEK: 0-1 LECTURE hours/weeks 3-12 LAB hours/week PRACTICUM hours/week

Note: # of credits are based on contact hours. 800 minutes of lecture=1 credit. 2400 minutes of lab in a science course=1 credit. 1600 minutes in non-science lab=1 credit. 2400-4800 minutes of practicum=1 credit. 2400-8000 minutes of internship=1 credit. This must match with the syllabus. See <http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/guidelines-for-computing-/> for more information on number of credits.

OTHER HOURS (specify type) _____

10. COMPLETE CATALOG DESCRIPTION including dept., number, title, credits, credit distribution, cross-listings and/or stacking (50 words or less if possible):

BIOL F488 Research Experience in Biology
4 Credits Offered Fall and Spring
 Provides undergraduate opportunities for student research in advanced life sciences topics beyond typical undergraduate laboratory or course offerings. Students are required to publicly present their work and turn in a final report suitable for submission to a discipline-specific journal. Research areas range across all life sciences subjects (evolution, ecology, physiology, cell biology, biochemistry, molecular biology etc.). A substantial level of background in the specific discipline, a level commensurate with having achieved junior or senior standing, is assumed. *Prerequisites: CHEM 105; CHEM 106; BIOL 115; BIOL 116; or permission of instructor. (0-1 + 10-15).*

11. COURSE CLASSIFICATIONS: Undergraduate courses only. Consult with CLA Curriculum Council to apply S or H classification appropriately; otherwise leave fields blank.

H = Humanities S = Social Sciences

Will this course be used to fulfill a requirement for the baccalaureate core? If YES, attach form. YES: NO:

IF YES, check which core requirements it could be used to fulfill:
 O = Oral Intensive, Format 6 W = Writing Intensive, Format 7 Natural Science, Format 8

12. COURSE REPEATABILITY:

Is this course repeatable for credit? YES NO

Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).

BIOL 488 can be repeated by students engaging in a new project in the same or a different discipline or extending a previous project to a next logical step.

How many times may the course be repeated for credit? TIMES

If the course can be repeated for credit, what is the maximum number of credit hours that may be earned for this course? CREDITS

If the course can be repeated with variable credit, what is the maximum number of credit hours that may be earned for this course? CREDITS

13. GRADING SYSTEM: Specify only one. Note: Later changing the grading system for a course constitutes a Major Course Change.

LETTER: PASS/FAIL:

RESTRICTIONS ON ENROLLMENT (if any)

14. PREREQUISITES

These will be *required* before the student is allowed to enroll in the course.

15. SPECIAL RESTRICTIONS, CONDITIONS

16. PROPOSED COURSE FEES

Has a memo been submitted through your dean to the Provost for fee approval?
Yes/No

17. PREVIOUS HISTORY

Has the course been offered as special topics or trial course previously?
Yes/No

If yes, give semester, year, course #, etc.:

18. ESTIMATED IMPACT

WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.

Research Experience in Biology will be coordinated by a faculty member who will meet with the students at the start of the semester to insure their readiness for research and help them identify a faculty mentor. Any research costs (supplies etc) will be borne by the faculty mentor (on their grant) or scholarships (available through URSA, the Center for Research Services, etc.). We do not anticipate a negative budget impact. The course will be offered on campus at.

19. LIBRARY COLLECTIONS

Have you contacted the library collection development officer (kljensen@alaska.edu, 474-6695) with regard to the adequacy of library/media collections, equipment, and services available for the proposed course? If so, give date of contact and resolution. If not, explain why not.

No Yes Current library resources are satisfactory; no additional resources will be required.

20. IMPACTS ON PROGRAMS/DEPTS

*What programs/departments will be affected by this proposed action?
Include information on the Programs/Departments contacted (e.g., email, memo)*

This class will increase active participation by undergraduates in research at UAF by bringing potential student research and faculty mentor together, insuring that students have all necessary certifications required for participation the discipline-specific project and relieving faculty mentors of the burden of organizing multiple individual study courses. In so doing, this course will contribute significantly to the mission of making UAF one of the nation's premier student-focused research universities. Having a vibrant and dynamic culture of undergraduate research, being one of the nation's premier student-focused research universities, is certain to have a positive effect on student recruitment, retention and engagement.

21. POSITIVE AND NEGATIVE IMPACTS

Please specify positive and negative impacts on other courses, programs and departments resulting from the proposed action.

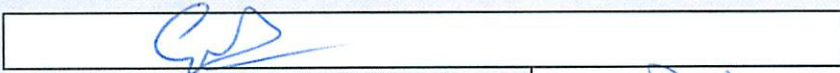
We anticipate that the course will represent an important recruiting platform for prospective undergraduate researchers and will have a positive impact on enrollment at UAF and in biology programs. Potential for negative impacts include: student enrollment in BIOL 497 and a student demand for faculty mentors that is too high to be met by faculty members – it seems unlikely that either of these will truly have a negative impact on the biology program or UAF academics.

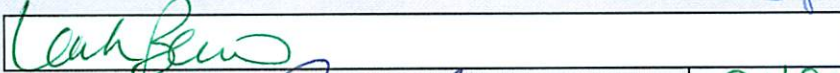
JUSTIFICATION FOR ACTION REQUESTED

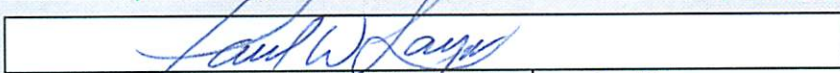
The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. Use as much space as needed to fully justify the proposed course.

Providing opportunities for undergraduate research is a high impact educational practice. In the current economic climate and in the face of rising tuition costs, such high impact practices are essential to successful recruiting and retention of students at post-secondary learning institutions. In recognition of this, UAF has increased its commitment to undergraduate research through its creation of URSA and consideration of instituting courses in all disciplines. Creation of the course BIOL 488 will emphasize the Department of Biology & Wildlife's alignment with the URSA mission (to support, develop and institutionalize a broad-based and robust program of undergraduate research and creative scholarship) and create a course in biology that emphasizes student participation in research. Undergraduate student participation in research can be expected to improve skills in critical thinking and communication and to engender a culture of life-long learning among all students, as well as enhance preparation and education of students who will fill the needs of Alaska's 21st century workforce and society. Thus, undergraduate student participation in research is appropriate for any student regardless of whether or not their future career will involve research. BIOL 488 will afford students an opportunity to actively participate in research. These opportunities will have a preparatory benefit; they will help develop and improve critical thinking skills, which are essential for success in any field. For those students who aspire to post-graduate research positions, the opportunity to develop research skills will be particularly beneficial.

APPROVALS: Add additional signature lines as needed.

	Date	Sept 19, 2012
Signature, Chair, Program/Department of:	Biology and Wildlife	

	Date	9/26/2012
Signature, Chair, College/School Curriculum Council for:	CNSM	

	Date	10/1/12
Signature, Dean, College/School of:	CNSM	

	Date	
--	------	--

Signature of Provost (if applicable)
Offerings above the level of approved programs must be approved in advance by the Provost.

ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE

	Date	
--	------	--

Signature, Chair
Faculty Senate Review Committee: ___Curriculum Review ___GAAC
___Core Review ___SADAC

ADDITIONAL SIGNATURES: (As needed for cross-listing and/or stacking)

	Date	
Signature, Chair, Program/Department of:		

	Date	
Signature, Chair, College/School Curriculum Council for:		

	Date	
Signature, Dean, College/School of:		

	Date	
<i>Signature, Chair, Program/Department of:</i>		

	Date	
<i>Signature, Chair, College/School Curriculum Council for:</i>		

	Date	
<i>Signature, Dean, College/School of:</i>		

ADDITIONAL SIGNATURES: (As needed for cross-listing and/or stacking)

	Date	
Signature, Chair, Program/Department of:		

	Date	
Signature, Chair, College/School Curriculum Council for:		

	Date	
Signature, Dean, College/School of:		

	Date	
<i>Signature, Chair, Program/Department of:</i>		

	Date	
<i>Signature, Chair, College/School Curriculum Council for:</i>		

	Date	
<i>Signature, Dean, College/School of:</i>		

Preliminary Syllabus:

URSA 488

Research Experience in Biology

Fall 2013

CRN Number: TBD

Instructor: Barbara Taylor, PhD
Contact Information: betaylor@alaska.edu; 474-2487
Office Location: 241A Arctic Health Research Building
Office Hours for Students: Mondays 1-3pm

Course Readings/Materials:

How to Mentor Undergraduate Researchers Council on Undergraduate Research (CUR)

<http://www.cur.org>

Laboratory Skills for Science and Medicine: an introduction Maxine Lintern Radcliffe Publishing
ISBN-13: 978 1 84619 016 2

Course Description:

Undergraduate research refers to collaboration in original research between an undergraduate student and a faculty member, leading to work which is presentable to scholars in the field. Research projects may be an element of the faculty member's work or could be initiated by the student. Undergraduate research offers opportunities for student research in advanced topics beyond typical undergraduate course offerings. Enrolled student are required to make a poster presentation of their project and turn in a progress report. Research areas range across all life sciences disciplines. A substantial level of discipline-specific background, a level commensurate with having achieved junior or senior standing, is assumed.

Course Goals:

Involvement in research can be an important ingredient in a successful and satisfying undergraduate program in biology. Undergraduate research gives students a chance to discuss research projects with faculty members, participate in ongoing projects in research laboratories, write a research report and present a research poster. As a research university, UAF strives to communicate to undergraduate students how research and scholarly activity is conducted. Accordingly, the course goals of BIOL 488 are that students learn, through direct research experience, how discipline-specific knowledge is created and how to communicate research results in oral, written and performance formats.

Student Learning Outcomes:

The intended outcomes of BIOL 488 are that students learn, through direct research experience, how discipline-specific knowledge is created and how to communicate research results in oral, written and performance formats. Specifically students will learn:

1. tools, skills and techniques specific to the discipline that encompasses their project

2. critical thinking skills leading to ability to engage in research, to interpret results and to formulate future questions and directions
3. to communicate research motivations, results and conclusions in oral, written, poster and performance formats.

Instructional Methods & Course Activities:

Course Meetings Classes will be held during the first 2 weeks of the semester. The purpose of these classes is to assist students in identifying research mentors and insure each student completes any training required for research participation in their chosen discipline. Attendance is mandatory even if the student has a research project and has completed all necessary training.

Course Projects The research project should be envisioned as a component of a publication in a peer-reviewed journal. It should be well-defined, stand a reasonable chance of completion in the available time, apply and develop an understanding of in-depth concepts and be grounded in the primary scholarly literature.

Finding a project First-time BIOL 488 students, or returning students planning to work with a different professor, must meet with at least three faculty members to discuss possible projects. The signatures of the three faculty members must be obtained on the attached form. After these meetings the student will select a research project and mentor, as well as write a half-page description outlining the proposed project, including one reference, on the attached form. The project description must be submitted by 5 PM of the 3rd Friday of the semester (please also send a copy to the research mentor). The project description should be written in consultation with the research mentor. For information about faculty and their research areas, visit the faculty web pages at <http://www.uaf.edu/>. Continuing students must submit a project description outlining each semester's proposed research.

Number of credits Credits are assigned at the beginning of the semester when students enroll, but may be subject to change as the result of consultation between the student and professor. Two credits of BIOL 488 is reserved generally for literature research or small computational projects. In general, 3 credits provide an absolute minimum amount of time to accomplish a studio-, laboratory- or field-based project; 4 credits may be appropriate if the student has a large ongoing project with plenty of available time. Six credits of BIOL 488 are acquired by students who enroll in BIOL 488 for multiple semesters. Each credit of BIOL 488 corresponds to an average weekly minimum of 3 hours working productively in the laboratory/field/studio, plus 1-2 hours additional work on the project (planning, interpretation, notebook writing and background reading).

Research paper Each semester a final report, written according to the format of a manuscript to be submitted to a research journal or the discipline-specific equivalent, is required. Early in the semester the student and mentor should decide on an appropriate format. Midway through the semester the student should begin writing the report. Copies of the report are to be submitted to

both the research mentor and the instructor no later than 5 PM on the last day of final exams for the semester. Reports must be well-written, comprehensive and contain appropriate citations. Although oral presentations, poster presentations, and journal article co-authorship are valuable, they do not substitute for the student writing a comprehensive report. Students who are using this course to meet the capstone requirement of the Biological Sciences program will have their final paper evaluated by their research mentor using the capstone project rubric attached as the last page of this syllabus.

Public Presentation (poster) Students must create a poster suitable for presentation at UAF Research Day (usually at the end of April). Continuing students present a poster describing their most recent results. The usual size is 36" x 48", but other sizes may be appropriate if the student will be presenting a poster at a regional or national conference. The cost of poster printing will be paid by the Biology & Wildlife Department and/or URSA.

Course Calendar:

Course week	Course Topic	Course Assignment
1	Research at UAF: opportunities and requirements for participation	
2	How to prepare a Project Report and Poster	
3	Individual research	Project Proposal
4	Individual research	
5	Individual research	
6	Individual research	
7	Individual research	
8	Individual research	
9	Individual research	
10	Individual research	
11	Individual research	
12	Individual research	
13	Individual research	
14	Individual research, poster preparation	
15	Poster Symposium	Project Poster or Talk
Finals week		Project Report

Course Policies:

Safety All research students must complete safety training. This may involve several online training presentations (with quizzes that you must pass). Contact your department's Safety Coordinator to arrange for training before beginning your project.

Safety Tips While Safety Coordinators will provide a thorough review of safety issues, and you will hopefully have gained safety knowledge in previous courses, here we emphasize several important points. Project work must be carried out with all due caution. Do not work alone. Wear safety gear as suggested. Do not rush. Do not attempt a procedure without the necessary training. Familiarize yourself with the potential hazards of materials you are using. Use common sense. This is a learning experience, so do not be bashful about asking for assistance.

Attendance In consultation with your mentor, establish a regular schedule of attendance in the mentor's work area (studio, laboratory, etc.). You may also be asked to attend a regular research meetings with your mentor and other students held weekly or periodically during the semester. Regular attendance is required. You are expected to attend all classes. Classes will be held during the first two weeks of the semester. The purpose of these classes is to assist students in identifying research mentors and insure each student completes any training required for research participation in their chosen discipline.

If you are required to participate in: military; UAF-sponsored activities; or documented, necessary participation in cultural activities that will cause you to miss a class, you must notify me as soon as possible. You must notify me of all scheduled UAF-required absences for the semester (e.g. athletic events) during the first week of classes.

Research Hours The total number of hours spent working on the project (both time in and away from your mentor's workplace, doing background reading, data production and analysis, creation, practice, performance or poster and report preparation will vary between students and projects. Spend all the time necessary to complete the proposed project and facilitate the poster and report presentation required at the end of the semester. The number of credits assigned for each student's BIOL 488 course is determined by the project. As a rough guide, students should spend an average minimum of 3 hours per week per credit.

Student Conduct As a UAF student, you are subject to the Student Code of Conduct (<http://www.uaf.edu/ses/student-resources/conduct/#condu>). In accordance with Board of Regents' Policy 09.02.01, UAF will maintain an academic environment in which the freedom to teach, conduct research, learn, and administer the university is protected. Students will enjoy maximum benefit from this environment by accepting responsibilities commensurate with their role in the academic community. The principles of the Code are designed to facilitate communication, foster academic integrity, and defend freedoms of inquiry, discussion, and expression among members of the university community. You should become familiar with

campus policies and regulations as published in the student handbook.

UAF requires students to conduct themselves honestly and responsibly, and to respect the rights of others. Conduct that unreasonably interferes with the learning environment or that violates the rights of others is prohibited. Students and student organizations will be responsible for ensuring that they and their guests comply with the Code while on property owned or controlled by the university or at activities authorized by the university.

Disciplinary action may be initiated by the university and disciplinary sanctions imposed against any student or student organization found responsible for committing, attempting to commit, or intentionally assisting in the commission of any of the following prohibited forms of conduct:

- A. cheating, plagiarism, or other forms of academic dishonesty;
- B. forgery, falsification, alteration, or misuse of documents, funds, or property;
- C. damage or destruction of property;
- D. theft of property or services;
- E. harassment;
- F. endangerment, assault, or infliction of physical harm;
- G. disruptive or obstructive actions;
- H. misuse of firearms, explosives, weapons, dangerous devices, or dangerous chemicals;
- I. failure to comply with university directives;
- J. misuse of alcohol or other intoxicants or drugs;
- K. violation of published university policies, regulations, rules, or procedures; or
- L. any other actions that result in unreasonable interference with the learning environment or the rights of others.

This list is not intended to define prohibited conduct in exhaustive terms, but rather to set forth examples to serve as guidelines for acceptable and unacceptable behavior.

Honesty is a primary responsibility of you and every other UAF student. The following are common guidelines regarding academic integrity:

- Students will not collaborate on any quizzes or exams that will contribute to their grade in a course, unless permission is granted by the instructor of the course. Only those materials permitted by the instructor may be used to assist in quizzes and exams.
- Students will not represent the work of others as their own. A student will attribute the source of information not original with himself or herself (direct quotes or paraphrases) in compositions, theses and other reports.
- No work submitted for one course may be submitted for credit in another course without the explicit approval of both instructors.

Alleged violations of the Code of Conduct will be reviewed in accordance with procedures specified in regent's policy, university regulations and UAF rules and procedures. For additional information and details about the Student Code of Conduct, contact the Dean of Student Services or web www.alaska.edu/bor/ or refer to the student handbook that is printed in the back of the class schedule for each semester. Students are encouraged to review the entire code.

A Few Words on Plagiarism: In general, DO NOT present someone else's ideas or data as your own: you are expected and required to give credit where credit is due. Plagiarism is a violation of the law and may lead to serious repercussions! Please follow the following guidelines: for any written assignments, if you use someone else's ideas, data, or other information, write it in your own words and include the reference in parentheses directly following that information. Avoid copying someone else's text. If, however, you feel you have to include an exact copy of that text, put it in quotation marks followed by the reference in parentheses. Of course, include all cited references in the Literature Cited section. During oral presentations, please acknowledge the sources by mentioning their name(s) and year of publication or by printing them on overheads, slides, or handouts. Also be aware that you need to cite earlier work by yourself. Any substantial use of any written or other materials that was used for another course or that was generated in any other circumstances will not be accepted for credit in this course. Only minor contributions from earlier work with appropriate citation(s) will be accepted.

Withdrawal Students are expected to formally withdraw from the class if they cannot complete the course; they will not be automatically withdrawn by the instructor or their research mentor if they do not attend or fall behind. Students who do not successfully complete the class and do not withdraw will receive a grade of "F".

Student Responsibility As students, you must accept the responsibility of ensuring your own success. It is your responsibility to know what you need to do and when you need to do it. This requires a great deal of initiative on your part. Always ask if you don't know what is expected of

you. Never wait for someone to tell you. "I didn't know," and "no one told me," are not acceptable reasons for failure to fulfill your student obligations. I am here to help and support students who take the initiative to help themselves.

Evaluation:

Students will receive a letter grade based on their performance on course assignments.

Assignment	Percentage Contribution to Final Grade
Class Participation	10
Project Proposal	10
Poster Presentation	40
Project Report	40

Students will be graded on a straight percentage basis: 90-100% is an A, 80-89.9% is a B, 70-79.9% is a C, 60-69.9% is a D, and < 60% is an F. Students will not be graded on a curve. This means that, in principle, it will be possible for everyone to get an A in this course.

Support Services:

Students in need of support are encouraged to contact me via telephone. I have posted office hours and am available for group and private face to face meetings during the specified times. All college classes require strong reading and communication skills. There may be a student support program in your area. **If you feel that you may be falling behind, contact me immediately.** I want you to be successful. Never be afraid to ask for help.

Disabilities Services:

The Office of Disability Services (208 WHIT, 474-5655) implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials. I will work with the Office of Disabilities Services to provide reasonable accommodation to rural students with disabilities. Please contact me or The Office of Disability Services is you require special assistance.

**University of Alaska Fairbanks, Division of General Studies
URSA 388 Undergraduate Research and Creative Scholarship I**

Student name:

UAF email address (must be your UAF address):

Return this page with three or more signatures to Dr Taylor's mailbox in the URSA Office Room 301 by the 3rd Friday of the semester. Include a half-page description of the proposed research project.

Faculty researcher consulted	Signature	Date

I agree to serve as research mentor for the above student. A description of the proposed research, along with a statement of possible laboratory hazards associated with the project, is attached.

Mentor Name (print):

Date:

Mentor Signature:

Number of Credit hours:

The above student has completed his or her safety training and is approved for working on this project.

Safety Coordinator:

Date:

If IACUC or IRB training is required for the project, attached an email that confirms completion of training.

University of Alaska Fairbanks, Division of General Studies

Trial COURSE or New Course - FORMAT 1

URSA 388 Undergraduate Research and Creative Scholarship I

Name:

Mentor:

Semester:

Description of proposed research (Including overview of planned laboratory procedures and materials, including descriptions of potentially hazardous procedures or materials):

Lead-in literature reference:

Trial COURSE or New Course - FORMAT 1

Capstone Project in Biological Sciences

The intent of the Biological Sciences capstone project is to integrate a range of 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 capstone project in Biological Sciences consists of mentored research project on a biological topic that is 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 both evaluation of data and communication of the study intent, methods, results, interpretation, and conclusion in the form of a written paper. The capstone project requirement may be met in two ways, detailed below.

First, the student may pass, with C grade or better, 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 can be found 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 student will communicate the results of the project in a written report. Some capstone courses may require that students communicate their research findings in additional ways, such as in an oral report or poster presentation

Second, the student may satisfy the capstone requirement by conducting a research project with a faculty mentor, typically a member of the UAF Biology & Wildlife faculty. A student may receive course credits for the research project by enrolling in independent study (BIOL 397 or 497) or undergraduate biology research (BIOL 488 or URSA 488); 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 may satisfy the capstone requirements as well. In either case, to satisfy the capstone requirement using a research project conducted outside a designated capstone course, the student must file a petition with the Biology & Wildlife department chair. The petition must include a memo by the student's faculty mentor confirming that the work was completed and a copy of the mentor's written assessment of the final paper, showing that the work was of satisfactory quality.

All capstone projects will be assessed using a common set of expectations. The rubric used by mentors to grade capstone projects may be viewed here <link>.

Trial COURSE or New Course - FORMAT 1

Rubric for Undergraduate Research in Metabolism and Biochemistry Capstone Project
Final Evaluation of Capstone Project by Research Supervisor

<i>To be completed by student</i>	
Student's name _____	Date _____
Capstone Project Title _____	
Research Supervisor _____	

To be completed by Research Supervisor

	Yes (excellent)	Somewhat (adequate)	No (inadequate)
1. Does the capstone paper represent the student's own scientific research?			
2. Does the capstone paper make a compelling argument for the significance of the student's research within the context of the current literature?			
3. Does the capstone paper clearly articulate the student's research goals?			
4. Are the methods appropriate given the student's research agenda?			
5. Is the data analysis appropriate and accurate?			
6. Does the thesis skillfully interpret the results?			
7. Are the tables and figures clear, effective and informative?			
8. Is there a compelling discussion of the implications of findings?			
9. Is the literature review appropriate and complete?			
10. Are the citations presented consistently and professionally throughout the text and in the list of works cited?			
11. Is the writing appropriate for the target audience?			
12. Is the paper clearly communicated and free of language errors?			