today

3-UCCh. Stacking
2-GCCh.

SEP 0 6 2016

FORMAT 2

Submit originals (including syllabus) and one copy and electronic copy to the **Faculty Senate Office**
See http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/ for a complete description of the rules governing curriculum & course changes.

CHANGE COURSE (MAJOR) and DROP COURSE PROPOSAL
Attach a syllabus, except if dropping a course.

SUBMITTED BY:

Department	Fisheries	College/School	SFOS
Prepared by	Anne Beaudreau	Phone	907-796-5454
Email Contact	abeaudreau@alaska.edu	Faculty Contact	Anne Beaudreau

1. COURSE IDENTIFICATION: As the course now exists.

Dept FISH | Course # 612 | No. of Credits 4

COURSE TITLE Fish Conservation Biology

2. ACTION DESIRED: √ Check the changes to be made to the existing course.

Change Course [x] If Change, indicate below what is changing. | Drop Course [ ]

NUMBER [ ] | ***TITLE*** [x] | ***DESCRIPTION*** [x]
PREREQUISITES* [ ] | ***FREQUENCY OF OFFERING*** [ ]

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

CREDITS (including credit distribution) [ ] | ***COURSE CLASSIFICATION*** [ ]

ADD A STACKED LEVEL *(400/600)* *Include syllabi.* 400 | Dept. FISH | Course # 413

How will the two course levels differ from each other? How will each be taught at the appropriate level?:	The two courses differ as follows: 1. Only graduate students are required to lead a discussion and write a self-evaluation. 2. The participation grade for graduate students requires class attendance, participation during discussion, and weekly posting (14 total) of a current event in conservation. The participation grade for undergrads requires class attendance and participation during discussion. Undergrads receive separate credit for posting current events (9 total). 3. For the weekly 1-page paper analysis, graduates need to include a summary of how the work contributed to the body of research and/or theory on the subject, while undergraduates do not. Graduate papers need to be a full single-spaced page; undergrads can use 1.5 line spacing. 4. Undergraduate final papers are 10 pages in length, graduate final papers are 15 pages.

Stacked course applications are reviewed by the (Undergraduate) Curricular Review Committee and by the Graduate Academic and Advising Committee. Creating two different syllabi—undergraduate and graduate versions—will help emphasize the different qualities of what are supposed to be two different courses. The committees will determine: 1) whether the two versions are sufficiently different (i.e. is there undergraduate and graduate level content being offered); 2) are undergraduates being overtaxed?; 3) are graduate students being undertaxed? In this context, the committees are looking out for the interests of the students taking the course. Typically, if either committee has qualms, they both do. More info online - see URL at top of this page.

ADD NEW CROSS-LISTING	[ ]	Dept. & No. [ ]	Requires approval of both departments and deans involved. Add lines at end of form for additional signatures.
STOP EXISTING CROSS-LISTING	[ ]	Dept. & No. [ ]	Requires notification of other department(s) and mutual agreement. Attach copy of email or memo.
OTHER (specify)	[ ]		

3. 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 **and** the appropriate Faculty Senate curriculum committee. 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*	x *6 weeks to full semester*

OTHER FORMAT (specify all that apply)

Mode of delivery (specify lecture, field trips, labs, etc.) **Lecture, discussion**

4. COURSE CLASSIFICATIONS: (undergraduate courses only. Use approved criteria found in Chapter 12 of the curriculum manual. If justification is needed, attach separate sheet.)

H = Humanities [ ] S = Social Sciences [ ]

Will this course be used to fulfill a requirement for the baccalaureate core? **YES** [ ] **NO** [x]

IF YES*, check which core requirements it could be used to fulfill:

O = Oral Intensive, ***Format 6** also submitted [ ] W = Writing Intensive, ***Format 7** submitted [ ] X = Baccalaureate Core [ ]

4.A Is course content related to northern, arctic or circumpolar studies? If yes, a "snowflake" symbol will be added in the printed Catalog, and flagged in Banner.

YES [ ] **NO** [x]

5. COURSE REPEATABILITY:

Is this course repeatable for credit? **YES** [ ] **NO** [x]

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

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

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**

6. COMPLETE CATALOG DESCRIPTION including dept., number, title, credits, credit distribution, cross-listings and/or stacking, clearly showing the changes you want made. (Underline new wording ~~strike through old wording~~ and use complete catalog format including dept., number, title, credits and cross-listed and stacked.)

Example of a complete description:

PS F450 Comparative ~~Aboriginal~~ Indigenous Rights and Policies (s)
3 Credits
Offered As Demand Warrants
~~Case-study~~ Comparative approach ~~in assessing Aboriginal~~ to analyzing Indigenous rights and policies in different nation-state systems. ~~Seven Aboriginal situations~~ Multiple countries and specific policy developments examined for factors promoting or limiting self-determination. Prerequisites: Upper division standing or permission of instructor. (Cross-listed with ANS F450.) (3+0)

FISH 413/612 ~~Fish Conservation Biology~~ Marine and Freshwater Conservation Biology
4 Credits Offered Fall Odd-numbered Years
Conservation biology is an applied science that draws from multiple disciplines to address biodiversity loss, maintenance and restoration of threatened populations and habitats. This course will examine the theory and practice of conservation biology in aquatic ecosystems across genetic, population, community, and landscape scales. Using case studies, students will examine causes and consequences of biodiversity loss, extinction risk and endangered species management, and the human dimensions of conservation in the U.S. and worldwide. (4+0) ~~deals with maintaining and restoring threatened populations. Includes theoretical foundations of conservation biology and the practical lessons gained from studying historical conservation efforts. Emphasis on case studies. Note: This course is taught in Juneau. (3+2)~~

7. ***COMPLETE CATALOG DESCRIPTION AS IT SHOULD APPEAR AFTER ALL CHANGES ARE MADE:***

FISH 413 **Marine and Freshwater Conservation Biology**
4 Credits Offered Fall Odd-numbered Years
Conservation biology is an applied science that draws from multiple disciplines to address biodiversity loss, maintenance and restoration of threatened populations and habitats. This course will examine the theory and practice of conservation biology in aquatic ecosystems across genetic, population, community, and landscape scales. Using case studies, students will examine causes and consequences of biodiversity loss, extinction risk and endangered species management, and the human dimensions of conservation in the U.S. and worldwide. Prerequisites: upper-division standing, F200-level course in biological sciences or fisheries. Stacked with FISH 612. (4+0)

FISH 612 **Marine and Freshwater Conservation Biology**
4 Credits Offered Fall Odd-numbered Years
Conservation biology is an applied science that draws from multiple disciplines to address biodiversity loss, maintenance and restoration of threatened populations and habitats. This course will examine the theory and practice of conservation biology in aquatic ecosystems across genetic, population, community, and landscape scales. Using case studies, students will examine causes and consequences of biodiversity loss, extinction risk and endangered species management, and the human dimensions of conservation in the U.S. and worldwide. Prerequisites: graduate standing, or permission of instructor. Stacked with FISH 413. (4+0)

8. ***GRADING SYSTEM:*** ***Specify only one.***
LETTER: [x] PASS/FAIL: [ ]

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

This course is regularly taught by Dr. Beaudreau and will not affect her teaching workload. Stacking will not result in any additional space or resources than what is currently required for the course. It will continue to be offered by VCON, as it is now.

10. ***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 [x] Yes [ ]

I have not contacted the library collection development officer because I have taught this class twice before and confirm that the library has all required reading and reference materials that the students use in the course.

11. ***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 course will primarily affect the Fisheries department in SFOS. It has already been offered as a graduate level course and will not affect that program. It will provide another option for Fisheries undergraduates to fulfill a 400-level elective and offer a subject that is not presently covered in the undergraduate fisheries and marine science curriculum. This is especially useful for Juneau-based Fisheries undergraduates because it provides them with a local option for a 400-level Fisheries elective, of which there are relatively few. I have discussed this with several other Fisheries faculty, who were supportive of stacking this course.

12. ***POSITIVE AND NEGATIVE IMPACTS***
*Please specify **positive and negative** impacts on other courses, programs and departments resulting from the proposed action.*

I believe that the impacts of stacking this course will be largely positive, particularly for undergraduate Fisheries students. It is not required for the B.S. or B.A. in Fisheries, so it is unlikely to reduce enrollment in other fisheries courses. Instead, it will provide another option for students to fulfill a 400-

level elective. It will also enrich the course as a whole because it will open the door for more students with diverse backgrounds and perspectives, which will be hugely valuable to the quality (depth & breadth) of discussions we have on conservation issues.

13. 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. If you ask for a change in # of credits, explain why; are you increasing the amount of material covered in the class? If you drop a prerequisite, is it because the material is covered elsewhere? If course is changing to stacked (400/600), explain higher level of effort and performance required on part of students earning graduate credit. Use as much space as needed to fully justify the proposed change and explain what has been done to ensure that the quality of the course is not compromised as a result.

Justification for course title and description change

This was an existing catalog course that I began teaching in 2013 and have taught two times so far. The new title and description better reflect the scope of the course as I currently teach it. The description is essentially a more descriptive and detailed version of the original. The title reflects that the course is really about conservation of marine and freshwater ecosystems, rather than fish specifically.

Justification for stacking

This course was originally listed as a graduate-only course and I taught it at the 600-level in 2013 and 2015. I was asked by several undergraduates each time whether the course could be offered at the 400-level. There are no other 400-level courses in the undergraduate fisheries program that are strictly conservation focused. The syllabi that I developed differentiate between the amount of work required at each level. To summarize, additional effort required by graduate students includes:

1. Leading a discussion and writing a self-evaluation.

2. Weekly posting (14 total) of a current event in conservation as a component of the participation grade. Undergrads are graded separately on current events and only need to submit 9.

3. Including a summary in the weekly paper analysis of how the work contributed to the body of research and/or theory on the subject. Weekly papers need to be a full single-spaced page; undergrads can use 1.5 line spacing.

4. Final papers are 5 pages longer than undergrad requirement.

APPROVALS: (Forms with missing signatures will be returned. Additional signature blocks may be added as necessary.)

DocuSigned by: Gordon Kruse SEF6BC8679AF54E1...	Date	August 29, 2016	
Signature, Chair, Program/Department of:	Fisheries		
DocuSigned by: 86887D5E293D406...	Date	August 29, 2016	
Signature, Chair, College/School Curriculum Council for:	SFOS		
DocuSigned by: 86887D5E293D406...	Date	August 29, 2016	
Signature, Dean, College/School of:	SFOS		

Offerings above the level of approved programs must be approved in advance by the Provost (e.g., non-graduate level program offering of a 600-level course):

	Date	
Signature of Provost (if applicable)		

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; add more blocks as necessary.)

	Date		
Signature, Chair, Program/Department of:			
	Date		
Signature, Chair, College/School Curriculum Council for:			
	Date		
Signature, Dean, College/School of:			

Note: If removing a cross-listing, you may attach copy of email or memo to indicate mutual agreement of this action by the affected department(s).

If degree programs are affected, a Format 5 program change form must also be submitted.

ATTACH COMPLETE SYLLABUS (as part of this application). This list is online at: http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/uaf-syllabus-requirements/
The Faculty Senate curriculum committees will review the syllabus to ensure that each of the items listed below are included. If items are missing or unclear, the proposed course (or changes to it) may be denied.

SYLLABUS CHECKLIST FOR ALL UAF COURSES
During the first week of class, instructors will distribute a course syllabus. Although modifications may be made throughout the semester, this document will contain the following information (as applicable to the discipline):

1. Course information:
❑Title, ❑ number, ❑credits, ❑prerequisites, ❑ location, ❑ meeting time (make sure that contact hours are in line with credits).

2. Instructor (and if applicable, Teaching Assistant) information:
❑ Name, ❑ office location, ❑ office hours, ❑ telephone, ❑ email address.

3. Course readings/materials:
❑ Course textbook title, ❑ author, ❑ edition/publisher.
❑ Supplementary readings (indicate whether ❑ required or ❑ recommended) and
❑ any supplies required.

4. Course description:
❑ Content of the course and how it fits into the broader curriculum;
❑ Expected proficiencies required to undertake the course, if applicable.
❑ Inclusion of catalog description is *strongly* recommended, and
❑ Description in syllabus must be consistent with catalog course description.

5. ❑ Course Goals (general), and (see #6)

6. ❑ Student Learning Outcomes (more specific)

7. Instructional methods:
❑ Describe the teaching techniques (eg: lecture, case study, small group discussion, private instruction, studio instruction, values clarification, games, journal writing, use of Blackboard, audio/video conferencing, etc.).

8. Course calendar:
❑ A schedule of class topics and assignments must be included. Be specific so that it is clear that the instructor has thought this through and will not be making it up on the fly (e.g. it is not adequate to say "lab". Instead, give each lab a title that describes its content). You may call the outline Tentative or Work in Progress to allow for modifications during the semester.

9. Course policies:
❑ Specify course rules, including your policies on attendance, tardiness, class participation, make-up exams, and plagiarism/academic integrity.

10. Evaluation:
❑ Specify how students will be evaluated, ❑ what factors will be included, ❑ their relative value, and ❑ how they will be tabulated into grades (on a curve, absolute scores, etc.) ❑ Publicize UAF regulations with regard to the grades of "C" and below as applicable to this course. (Not required in the syllabus, but is a convenient way to publicize this.) Link to PDF summary of grading policy for "C": http://www.uaf.edu/files/uafgov/Info-to-Publicize-C_Grading-Policy-UPDATED-May-2013.pdf

11. Support Services:
❑ Describe the student support services such as tutoring (local and/or regional) appropriate for the course.

12. Disabilities Services: Note that the phone# and location have been **updated.** http://www.uaf.edu/disability/ 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.

❑ State that you will work with the Office of Disabilities Services (208 WHITAKER BLDG, 474-5655)to provide reasonable accommodation to students with disabilities.

FISH 612
Marine and Freshwater Conservation Biology
Fall, odd years

Course information
4 credits (4+0)
Prerequisites: graduate standing, or permission of instructor
Schedule: MW 10:30 am – 12:30 pm
Locations: Juneau and other locations via VCON

Instructor
Dr. Anne Beaudreau
321 Lena Point Building (Juneau)
E-mail: abeaudreau@alaska.edu
Phone: (907) 796-5454
Skype: anne.beaudreau
Office hours: Fridays 1:30-3:30 pm

Course readings/materials (see reading list on Course Schedule)
There is no textbook for this course. Required and recommended supplementary readings will be made available on Blackboard.

Course catalog description
FISH 612 Marine and Freshwater Conservation
4 Credits Offered Fall Odd-numbered Years
Conservation biology is an applied science that draws from multiple disciplines to address biodiversity loss, maintenance and restoration of threatened populations and habitats. This course will examine the theory and practice of conservation biology in aquatic ecosystems across genetic, population, community, and landscape scales. Using case studies, students will examine causes and consequences of biodiversity loss, extinction risk and endangered species management, and the human dimensions of conservation in the U.S. and worldwide. Prerequisites: graduate standing, or permission of instructor. Stacked with FISH 413. (4+0)

Course goals
The goals of this course are to introduce students to ecological and evolutionary principles that underlie marine and freshwater conservation through interactive lectures and assigned readings. Through discussion and writing, students will apply critical reasoning skills to assessment, analysis, and synthesis of conservation problems and solutions. They will discuss and understand ways that society shapes conservation efforts, including the forces of economics, policy, ethics, and institutions.

Student learning outcomes
In this course students will:
1) Learn how to measure biological diversity across biological scales (genes to landscapes) and geographical scales (local to global), proximate and ultimate threats to biodiversity, and consequences of biodiversity loss
2) Develop an understanding of important primary literature through written synthesis, critical analysis, and discussion of case studies that emphasize conservation issues in aquatic ecosystems
3) Practice articulating, through writing and discussion, the importance of published research studies to the broader body of research and/or theory on the subject

4) Become familiar with analytical tools and approaches in conservation science, such as population viability analysis and spatial conservation planning
5) Gain awareness about historical and contemporary issues in aquatic conservation
6) Build skills in leading class discussions of the literature, including preparing discussion materials and facilitating participation by all students
7) Develop a position paper on a conservation issue and present their viewpoints to a peer audience

Instructional methods

The course will be taught using a combination of interactive lectures and discussion. Lectures are designed to introduce students to ecological and evolutionary theory, classical and current literature, and empirical and modeling approaches in conservation biology. Discussions will focus on specific conservation case studies, with an emphasis on fish and aquatic organisms.

Outlines of the lectures, slides, handouts, and assignments will be provided to students through Blackboard. The course will be distance delivered from the Juneau campus.

Course policies

My approach to teaching is to promote active learning in the classroom. My role in this course is to largely serve as a facilitator in your exploration of marine and freshwater conservation. This includes providing the necessary background on each week's topics and moderating classroom discussions. Your role is to be an active, contributing member of the class.

Attendance and in-class participation are very important in learning the course material. If you cannot turn in an assignment or attend class for a legitimate reason, it is your responsibility to contact me one week in advance in order to avoid a penalty. Unexcused absences will result in deductions from your participation grade. With the exception of emergencies, late assignment requests will only be honored if a legitimate reason is provided to me in writing at least one week prior to the due date. **Assignments and the final paper will be reduced 10% of their total point value for each day late (including weekends).**

Cheating, plagiarism, and other forms of academic dishonesty will not be tolerated in this class. Cheating is when a student gives or receives any form of assistance during an examination or quiz; duplicated or paraphrased answers on assignments are also considered cheating. Plagiarism is defined as the submission or presentation of work that is not a student's own without acknowledgment of the source. Submission of the same work in more than one course without prior approval of all professors responsible for the courses is also considered academic dishonesty. Any suspected cases of academic misconduct will be handled according to University regulations and violations will result in automatic failure of the course.

You are responsible for understanding and following the UAF Student Code of Conduct (http://www.uaf.edu/catalog/current/academics/regs3.html).

Evaluation

Students will be evaluated on their participation, discussion leading, weekly writing assignments, and final paper, each comprising the following percentage of the final grade:

Assignment (N/semester)	**Percent of grade**
Final project (1)	30
Paper analysis (10)	40
Participation (15)	20
Discussion leader (1)	10
TOTAL	**100**

Each paper analysis is graded out of 10 points, discussion leader performance and the discussion self-evaluation are each evaluated out of 10 points, and participation is 10 points per week. The final project is graded out of 100 points. To calculate your final grade, use the following formula:

Final grade = (30*final project points)/100 + (40*paper analysis points)/100 + (20*participation points)/150 + (10*discussion leader points)/20

Letter grades are determined according to the following scale:

Points	**Grade**
90-100	A (≤ 92.9: A-, ≥ 97: A+)
80-89.9	B (≤ 82.9: B-, ≥ 87: B+)
70-79.9	C (≤ 72.9: C-, ≥ 77: C+)
60-69.9	D (≤ 62.9: D-, ≥ 67: D+)
< 60	F

Participation: Participation counts as 20% of your grade. To get full credit for participation each week (10 points/week), you must: (1) attend class (2 points), see the attendance policy above, (2) contribute to the class during lectures and discussion by asking questions and providing comments and input (4 points), and (3) post a news article (14 total) on the topic of a contemporary conservation issue on Blackboard by the beginning of class on Monday and be prepared to briefly summarize it for the class (4 points).

Leading discussions: Students will practice their communication skills throughout the semester by leading and participating in class discussions. Each student will lead 1 in-class discussion about the assigned readings for the week (10 points). Following each discussion, the student discussion leader will write a self-evaluation of the experience (10 points), including an assessment of how they would modify their strategy for future discussions. The assessment is due one week after the class discussion has taken place.

Weekly paper analysis: **The paper analysis is due at the beginning of class on Wednesday.** An important element of this course is gaining practice in reading, synthesizing, and critically evaluating scientific literature. For selected topics in the syllabus, students will write a 1 page summary that includes the following elements:

(1) A brief description of the study, including what was done, why, and what was discovered
(2) A summary of how the work contributed to the body of research and/or theory on the subject

(3) A critical assessment of the strengths and weaknesses of the work and additional questions that you have about the study

Paper format should be 12 pt font (e.g., Times New Roman), 1-inch margins, single-spaced.

Final project: Because of the multidisciplinary nature of conservation biology, it is most often practiced in a team setting, as are other emerging ecological disciplines like ecosystem management and restoration ecology. Each student will join a team of 3-4 students to complete a major course project based around a particular contemporary aquatic conservation issue. Groups will be composed of graduate and undergraduate students to the extent possible. The group will work together to identify their focal conservation issue; current events presented by students throughout the semester are a good starting place for ideas. They will collaboratively research the media and peer-reviewed literature related to the issue and interview one or more individuals involved in any aspect of the conservation problem to gain additional insight.

The final project will consist of the following:

1) Each student will independently develop a position paper that characterizes the conservation issue and presents his or her viewpoint on the problem. The paper should include relevant background information on the ecological and human dimensions of the conservation issue and describe actions taken to address it by communities, stakeholders, agencies, etc. It should also include a clear thesis statement defining the student's position and support the argument with evidence from the literature and other sources. Additional guidelines will be provided to the students regarding content and structure of the paper. Papers should be 15 pages double spaced 12-pt font, not including references.
2) Oral presentation by each group to the class (30 min). Collaboratively, the group will present their conservation issue, relevant background information, and a summary of their interview. Individually, each group member will present his or her position on the issue. Following the presentation, we will discuss the positions as a class and identify potential ways forward for addressing the conservation problem.
3) One-page reflection (single-spaced, 12 pt font) about the group discussion. How did you views change, if at all, after hearing the positions of others? Were any perspectives on the conservation issue, as you understand it, missing from the conversation? If there was disagreement among group members, were you able to find common ground? Where do you see the most potential for solving this issue in the real world?

Support services

This is an upper-level course which requires intensive learning, both in and out of the classroom. I encourage you to take advantage of my scheduled office hours or, if necessary, make an appointment to meet with me. If you are struggling with any aspects of the course material or learning environment, please talk with me before you get discouraged—I am happy to provide the support you need to be successful in the course.

Disabilities services

The UAF Office of Disability Services 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 Disability Services (208 Whitaker, Fairbanks campus;

http://www.uaf.edu/disability/) to provide reasonable accommodation to students with disabilities. You can also contact Disability Services by phone (907-474-5655) or e-mail (fydso@uaf.edu). If you need course adaptations or accommodations because of a disability, *please contact me as soon as possible* in order to make the necessary arrangements.

Beaudreau Last updated: 8/29/2016

FISH 413/612—Marine and Freshwater Conservation Biology

Fall 20xx schedule: MW 1030-1230

Week/ Dates	Topic	Reading list
1 W	**Introduction and overview** *Introduction to conservation biology; History of the conservation movement and conservation science; Relationship between fishery management and conservation* No paper analysis due this week	Required: None
2 M W	**Biological diversity and its role in ecological systems** *Global patterns of biodiversity; Taxonomic and functional diversity; Overview of threats to biodiversity and consequences of biodiversity loss* No paper analysis due this week	Required: 1. Soule ME (1985) What is conservation biology? BioScience 35(11):727-734 2. Rojas M (1992) The species problem and conservation: what are we protecting? Conservation Biology 6(2):170-178 Optional: 1. Gray JS (1997) Marine biodiversity: patterns, threats and conservation needs. Biodiversity and Conservation 6:153-175 2. Salomon AK et al. (2011) Bridging the divide between fisheries and marine conservation science. Bulletin of Marine Science 87(2):251-274
3 M W	**Biological diversity, continued** *Diversity and ecosystem functioning; Diversity-stability relationships* Paper analysis due Wed: Worm et al. 2006	Required: 1. Chapin FS, et al. (2000) Consequences of changing biodiversity. Nature 405:234-242 2. Symstad AJ, et al. (2003) Long-term and large-scale perspectives on the relationship between biodiversity and ecosystem functioning. BioScience 53(1):89-98 3. Worm B, et al. (2006) Impacts of biodiversity loss on ocean ecosystem services. Science 314:787-790 Optional: 1. Worm et al. (2006) Supporting Materials
4 M W	**Conservation genetics** *Importance of genetic diversity; Population genetic structure; Effective population size; Inbreeding depression; Evolutionary*	Required: 1. Allendorf and Luikart 2007. Chapter 16: Units of Conservation

	Significant Units (ESUs) and management units for conservation; Case Study: ESA-listed Puget Sound rockfish Paper analysis due Wed: Respond to discussion guide questions (Drake et al. 2010) Discussion leader: To be determined	2. Read the following sections of Drake et al. (2010): • Introduction • pages 3-5 (stop at "Bocaccio general biology") • pages 36-54 (Genetic Differentiation, DPS Scenarios, Western Boundary of Rockfish DPSs) Drake J.S., E.A. Berntson, J.M. Cope, et al. 2010. Status review of five rockfish species in Puget Sound, Washington: bocaccio (*Sebastes paucispinis*), canary rockfish (*S. pinniger*), yelloweye rockfish (*S. ruberrimus*), greenstriped rockfish (*S. elongatus*), and redstripe rockfish (*S. proriger*). U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-108, 234 p. Optional: 1. Drake et al. (2010): page 14 (start at "Ecological features and DPS discreteness") to page 21 (stop at "Oceanographic and geomorphological features...") 2. Additional information relevant to rockfish ESA process http://www.nwr.noaa.gov/protected_species/other/puget_sound_rockfish/puget_sound_rockfish.html
5 M W	**Extinction risk** *Definitions of extinction; Population dynamics review; Dynamics of small populations; Relationship between life history traits and extinction risk; Case Study: Devils Hole pupfish* Paper analysis due Wed: Deacon et al. 1991 Discussion leader: To be determined	Required: 1. Flather CH et al. (2011) Minimum viable populations: is there a 'magic number' for conservation practitioners? Trends in Ecology and Evolution 26(6):307-316 2. Reynolds JD (2003) Life histories and extinction risk. In: Macroecology (eds. TM Blackburn & KJ Gaston), pp 195-217. Blackwell Publishing, Oxford. 3. Deacon JE, Williams CD (1991) Ash Meadows and the legacy of the Devils Hole pupfish. J.E. Deacon and W.L. Minckley, eds. Battle Against Extinction (pp.69-87). Tucson, AZ: University of Arizona Press.
6 M W	**Extinction risk, continued** *Overview of extinction risk assessment; Extinction risk criteria under international, national, and state laws; Approaches for population viability analysis; Local versus global extinction; Case Study: sea turtle conservation*	Required: 1. Dulvy NK, Ellis JR, Goodwin NB, Grant A, Reynolds JD, Jennings S (2004) Methods of assessing extinction risk in marine fishes. Fish and Fisheries 5:255-276 2. Crouse DT, Crowder LB, Caswell H (1987) A stage-based

	Paper analysis due Wed: Crouse et al. 1987	population model for loggerhead sea turtles and implications for conservation. Ecology 68(5):1412-1423
7 M W	**Threats to biodiversity I: Perspectives from landscape ecology** *Landscape properties and effects on population and community dynamics; Habitat modification, degradation, and fragmentation—examples: climate change, dams; Case Study: Elwha dam removal* Paper analysis due Wed: Wootton 2012 Discussion leader: To be determined	Required: 1. Dunning JB, Danielson BJ, Pulliam HR (1992) Ecological processes that affect populations in complex landscapes. Oikos 65(1):169-175 2. Verdonschot et al. (2012) A comparative review of recovery processes in rivers, lakes, estuarine and coastal waters. Hydrobiologia (2013) 704:453–474 3. Wootton JT (2012) River Food Web Response to Large-Scale Riparian Zone Manipulations. PLoS ONE 7(12): e51839. doi:10.1371/journal.pone.0051839
8 M W	**Threats to biodiversity II: Perspectives from landscape ecology** (continued) *Metapopulation structure and connectivity; Island biogeography; Consequences of habitat fragmentation/loss for spatially structured populations; Case Study: water conservation in California* No paper analysis. Final project annotated outline due Fri.	Required: 1. Crowder LB, Figueira WF (2006) Ch. 15: Metapopulation ecology and marine conservation. *In* Marine Metapopulations, JP Kritzer and PF Sale (eds) Elsevier. 2. Poff et al. (2007) Homogenization of regional river dynamics by dams and global biodiversity implications. PNAS 104(14):5732-5737
9 M W	**Threats to biodiversity II: Perspectives from community ecology** *Role of apex predators in aquatic systems; Predation impacts of invasive species; Ecological consequences of predator loss; Public perception of predators; Case Study: invasive pike* Paper analysis due Wed: Patankar et al. 2006 Discussion leader: To be determined	Required: 1. Estes J, Crooks K, Holt R (2001) Ecological role of predators. Encyclopedia of Biodiversity, Vol. 4. Academic Press. 2. Carey MP, Sanderson BL, Barnas KA, Olden JD (2012) Native invaders—challenges for science, management, policy, and society. Frontiers in Ecology and the Environment 10(7):373-381 3. Patankar R, von Hippel FA, Bell MA. (2006) Extinction of a weakly armoured threespine stickleback (*Gasterosteus aculeatus*) population in Prator Lake, Alaska. Ecology of Freshwater Fish 15:482-487 Optional: 1. Kellert SR (1985) Public perceptions of predators, particularly the wolf and coyote. Biological Conservation 31: 167-189

10 M W	**Threats to biodiversity III: Perspectives from fisheries science** *Fishing effects on population structure, demography, distribution, and connectivity; Bycatch and impacts on non-target species; Derelict fishing gear and fishing impacts on benthic habitat; Case Study: conservation issues in recreational fishing* Paper analysis due Wed: Arlinghaus 2006 Discussion leader: To be determined	Required: 1. Crowder LB, Hazen EL, Avissar N, Bjorkland R, Latanich C, Ogburn MB (2008) The impacts of fisheries on marine ecosystems and the transition to ecosystem-based management. Annu. Rev. Ecol. Evol. Syst. 39:259–78 2. Post JR, Sullivan M, Cox S, Lester NP, Walters CJ, Parkinson EA, Paul AJ, Jackson L, Shuter BJ (2002) Canada's recreational fisheries: The invisible collapse? Fisheries 27(1):6-17 3. Arlinghaus R (2006) Overcoming human obstacles to conservation of recreational fishery resources, with emphasis on central Europe. Environmental Conservation 33(1):46–59
11 M W	**Threats to biodiversity IV: Global climate change** *Species distribution and demographic shifts; Climate effects on habitat quantity and quality; Climate impacts on biodiversity; Case Study: AK communities vulnerable to climate change* Paper analysis due Wed: Himes-Cornell & Kasperski 2015 Discussion leader: To be determined	Required: 1. Carpenter SR, Fisher SG, Grimm NB, Kitchell JF (1992) Global change and freshwater ecosystems. Annual Review of Ecology and Systematics 23:119-139 2. Cheung WWL, et al. (2009) Projecting global marine biodiversity impacts under climate change scenarios. Fish and Fisheries 10:235-151 3. Himes-Cornell A, Kasperski S (2015) Assessing climate change vulnerability in Alaska's fishing communities. Fisheries Research 162:1-11 Optional: 1. Walther G, Post E, Convey P, et al. (2002) Ecological responses to recent climate change. Nature 416:389-395
12 M W	**Preserving and protecting aquatic biodiversity** *Marine parks, protected areas, and reserves; Spatial management approaches; Socio-ecological trade-offs in spatial management; Case Study: marine reserves in Belize* Paper analysis due Wed: Ward et al. 1999 Final project progress report due Wed Discussion leader: To be determined	Required: 1. Salomon AK et al. (2011) Bridging the divide between fisheries and marine conservation science. Bulletin of Marine Science 87(2):251-274 2. McLeod E, Salm R, Green A, Almany J (2009) Designing marine protected area networks to address the impacts of climate change. Front Ecol Environ 7(7): 362–370 3. Ward TJ, Vanderklift MA, Nicholls AO, Kenchington RA (1999) Selecting marine reserves using habitats and species assemblages as surrogates for biological diversity. Ecological

		Applications 9(2):691–698
13 M W	**Economics of conservation** *Valuing biodiversity; Ecosystem services and natural capital; Current and future costs of conservation; Case Study: conservation markets for whales* Paper analysis due Wed: Gerber et al. 2014 Discussion leader: To be determined	Required: 1. Costanza R, d'Arge R, de Groot R, et al. (1997) The value of the world's ecosystem services and natural capital. Nature 387:253-260 2. Hunsicker ME, Essington TE, Watson R, Sumaila UR (2010) The contribution of cephalopods to global marine fisheries: can we have our squid and eat them too? Fish and Fisheries 11:421-438 3. Gerber LR, Costello C, Gaines SD (2014) Conservation markets for wildlife management with case studies from whaling. Ecological Applications 24(1):4-14
14 M W	**Conservation stewardship** *Stakeholder engagement; Role of culture, norms, and values in conservation; Advocacy and ethics of conservation science; Conservation biology as a profession* Course evals; Team presentations No paper analysis: Read Deacon in prep for lecture; read Poe & Sayce papers for discussion	Required: 1. Poe MR, Norman KC, Levin PS (2013) Cultural Dimensions of Socioecological Systems: Key Connections and Guiding Principles for Conservation in Coastal Environments. Conservation Letters 7(3):166-175 2. Sayce K, Shuman C, Connor D, et al. (2013) Beyond traditional stakeholder engagement: Public participation roles in California's statewide marine protected area planning process. Ocean & Coastal Management 74:57-66
15 M	**Wrap-up** No paper analysis: Read Holling and Meffe 1996 for discussion	Required: 1. Holling CS, Meffe GK (1996) Command and control and the pathology of natural resource management. Conservation Biology 10(2):328-337

Final paper due Wed of finals week

FISH 413
Marine and Freshwater Conservation Biology
Fall, odd years

Course information
4 credits (4+0)
Prerequisites: upper-division standing, F200-level course in biological sciences or fisheries
Schedule: MW 10:30 am – 12:30 pm
Locations: Juneau and other locations via VCON

Instructor
Dr. Anne Beaudreau
321 Lena Point Building (Juneau)
E-mail: abeaudreau@alaska.edu
Phone: (907) 796-5454
Skype: anne.beaudreau
Office hours: Fridays 1:30-3:30 pm

Course readings/materials (see reading list on Course Schedule)
There is no textbook for this course. Required and recommended supplementary readings will be made available on Blackboard.

Course catalog description
FISH 413 Marine and Freshwater Conservation
4 Credits Offered Fall Odd-numbered Years
Conservation biology is an applied science that draws from multiple disciplines to address biodiversity loss, maintenance and restoration of threatened populations and habitats. This course will examine the theory and practice of conservation biology in aquatic ecosystems across genetic, population, community, and landscape scales. Using case studies, students will examine causes and consequences of biodiversity loss, extinction risk and endangered species management, and the human dimensions of conservation in the U.S. and worldwide. Prerequisites: upper-division standing, F200-level course in biological sciences or fisheries. Stacked with FISH 612. (4+0)

Course goals
The goals of this course are to introduce students to ecological and evolutionary principles that underlie marine and freshwater conservation through interactive lectures and assigned readings. Through discussion and writing, students will apply critical reasoning skills to assessment, analysis, and synthesis of conservation problems and solutions. They will discuss and understand ways that society shapes conservation efforts, including the forces of economics, policy, ethics, and institutions.

Student learning outcomes
In this course students will:
1) Learn how to measure biological diversity across biological scales (genes to landscapes) and geographical scales (local to global), proximate and ultimate threats to biodiversity, and consequences of biodiversity loss
2) Develop an understanding of important primary literature through written synthesis and discussion of case studies that emphasize conservation issues in aquatic ecosystems
3) Become familiar with analytical tools and approaches in conservation science, such as population viability analysis and spatial conservation planning
4) Gain awareness about historical and contemporary issues in aquatic conservation

5) Develop a position paper on a conservation issue and present their viewpoints to a peer audience

Instructional methods

The course will be taught using a combination of interactive lectures and discussion. Lectures are designed to introduce students to ecological and evolutionary theory, classical and current literature, and empirical and modeling approaches in conservation biology. Discussions will focus on specific conservation case studies, with an emphasis on fish and aquatic organisms.

Outlines of the lectures, slides, handouts, and assignments will be provided to students through Blackboard. The course will be distance delivered from the Juneau campus.

Course policies

My approach to teaching is to promote active learning in the classroom. My role in this course is to largely serve as a facilitator in your exploration of marine and freshwater conservation. This includes providing the necessary background on each week's topics and moderating classroom discussions. Your role is to be an active, contributing member of the class.

Attendance and in-class participation are very important in learning the course material. If you cannot turn in an assignment or attend class for a legitimate reason, it is your responsibility to contact me one week in advance in order to avoid a penalty. Unexcused absences will result in deductions from your participation grade. With the exception of emergencies, late assignment requests will only be honored if a legitimate reason is provided to me in writing at least one week prior to the due date. **Assignments and the final paper will be reduced 10% of their total point value for each day late (including weekends).**

Cheating, plagiarism, and other forms of academic dishonesty will not be tolerated in this class. Cheating is when a student gives or receives any form of assistance during an examination or quiz; duplicated or paraphrased answers on assignments are also considered cheating. Plagiarism is defined as the submission or presentation of work that is not a student's own without acknowledgment of the source. Submission of the same work in more than one course without prior approval of all professors responsible for the courses is also considered academic dishonesty. Any suspected cases of academic misconduct will be handled according to University regulations and violations will result in automatic failure of the course.

You are responsible for understanding and following the UAF Student Code of Conduct (http://www.uaf.edu/catalog/current/academics/regs3.html).

Evaluation

Students will be evaluated on their participation, discussion leading, weekly writing assignments, and final paper, each comprising the following percentage of the final grade:

Assignment (N/semester)	**Percent of grade**
Final project (1)	30
Paper analysis (10)	40

Participation (15)	20
Current events (9)	10
TOTAL	**100**

Each paper analysis is graded out of 10 points, current events are 1 point each, and participation is 10 points per week. The final project is graded out of 100 points. To calculate your final grade, use the following formula:

Final grade = (30*final project points)/100 + (40*paper analysis points)/100 + (20*participation points)/150 + (10*current events points)/9

Letter grades are determined according to the following scale:

Points	**Grade**
90-100	A (≤ 92.9: A-, ≥ 97: A+)
80-89.9	B (≤ 82.9: B-, ≥ 87: B+)
70-79.9	C (≤ 72.9: C-, ≥ 77: C+)
60-69.9	D (≤ 62.9: D-, ≥ 67: D+)
< 60	F

Participation: Participation counts as 20% of your grade. To get full credit for participation each week (10 points/week), you must: (1) attend class (5 points), see the attendance policy above, and (2) contribute to the class during lectures and discussion by asking questions and providing comments and input (5 points).

Current events: Post a news article on the topic of a contemporary conservation issue on Blackboard by the beginning of class on Monday and be prepared to briefly summarize it for the class (1 point/week). Full credit will be received for posting an article in at least 9 out of the 15 weeks in the semester.

Weekly paper analysis: **The paper analysis is due at the beginning of class on Wednesday.** An important element of this course is gaining practice in reading, synthesizing, and critically evaluating scientific literature. For selected topics in the syllabus, students will write a 1 page summary that includes the following elements:

(1) A brief description of the study, including what was done, why, and what was discovered
(2) A critical assessment of the strengths and weaknesses of the work and additional questions that you have about the study

Paper format should be 12 pt font (e.g., Times New Roman), 1-inch margins, 1.5 line spacing.

Final project: Because of the multidisciplinary nature of conservation biology, it is most often practiced in a team setting, as are other emerging ecological disciplines like ecosystem management and restoration ecology. Each student will join a team of 3-4 students to complete a major course project based around a particular contemporary aquatic conservation issue. Groups will be composed of graduate and undergraduate students to the extent possible. The group will work together to identify their focal conservation issue; current events presented by students

throughout the semester are a good starting place for ideas. They will collaboratively research the media and peer-reviewed literature related to the issue and interview one or more individuals involved in any aspect of the conservation problem to gain additional insight.

The final project will consist of the following:

1) Each student will independently develop a position paper that characterizes the conservation issue and presents his or her viewpoint on the problem. The paper should include relevant background information on the ecological and human dimensions of the conservation issue and describe actions taken to address it by communities, stakeholders, agencies, etc. It should also include a clear thesis statement defining the student's position and support the argument with evidence from the literature and other sources. Additional guidelines will be provided to the students regarding content and structure of the paper. Papers should be 10 pages double spaced 12-pt font, not including references.
2) Oral presentation by each group to the class (30 min). Collaboratively, the group will present their conservation issue, relevant background information, and a summary of their interview. Individually, each group member will present his or her position on the issue. Following the presentation, we will discuss the positions as a class and identify potential ways forward for addressing the conservation problem.
3) One-page reflection (single-spaced, 12 pt font) about the group discussion. How did you views change, if at all, after hearing the positions of others? Were any perspectives on the conservation issue, as you understand it, missing from the conversation? If there was disagreement among group members, were you able to find common ground? Where do you see the most potential for solving this issue in the real world?

Support services

This is an upper-level course which requires intensive learning, both in and out of the classroom. I encourage you to take advantage of my scheduled office hours or, if necessary, make an appointment to meet with me. If you are struggling with any aspects of the course material or learning environment, please talk with me before you get discouraged—I am happy to provide the support you need to be successful in the course.

Disabilities services

The UAF Office of Disability Services 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 Disability Services (208 Whitaker, Fairbanks campus; http://www.uaf.edu/disability/) to provide reasonable accommodation to students with disabilities. You can also contact Disability Services by phone (907-474-5655) or e-mail (fydso@uaf.edu). If you need course adaptations or accommodations because of a disability, *please contact me as soon as possible* in order to make the necessary arrangements.

Curriculum Committee SFOS

Members: Trent Sutton (Chair)
Gordon Kruse
Sarah Hardy
Jennifer Reynolds

18 August 2016

Course Change
Course Number: FISH 612/413
Course Title: Fish Conservation Biology
Instructor: Beaudreau
First Time of Offering: No

General Recommendations:
One of the recommended changes was to add "Biology" to the title. The thought was that Marine and Freshwater Conservation has a different focus (more management) than Marine and Freshwater Conservation Biology (more biological).

I made the recommended title change.

Faculty Senate Form:

Clarify and Address the following:

- Section 6. FISH 4xx is FISH 413.
- Section 7. FISH 4xx is FISH 413. That needs to be changed in the undergraduate course description and at the end of the graduate course description.

I corrected the course number in all relevant documents.

Syllabus:

- For the graduate course syllabus, "Stacked with FISH 4xx" should be "FISH 413".

Corrected.

- For the undergraduate course syllabus, change all of the FISH 4xx to FISH 413, including the course schedule table.

Corrected.

- The student learning outcomes needs to be somewhat different between the undergraduate and graduate versions. Specifically, address how the graduate version of this course results in higher-level understanding than the undergraduate version.

The learning outcomes were revised as below. Changes are underlined and in bold. Summary of changes: For 413, "critical analysis" was removed from the second learning outcome to emphasize that the primary goal is to learn how to synthesize and summarize published research, rather than critically evaluate it. For 612, "critical analysis" was included in learning outcome 2. Two additional learning outcomes were included—one that emphasizes understanding how the papers we read and discuss are situated in the broader literature (3) and one focused on development of discussion leading skills (6).

FISH 413
In this course students will:

1) Learn how to measure biological diversity across biological scales (genes to landscapes) and geographical scales (local to global), proximate and ultimate threats to biodiversity, and consequences of biodiversity loss
2) Develop an understanding of important primary literature through **written synthesis and discussion** of case studies that emphasize conservation issues in aquatic ecosystems
3) Become familiar with analytical tools and approaches in conservation science, such as population viability analysis and spatial conservation planning
4) Gain awareness about historical and contemporary issues in aquatic conservation
5) Develop a position paper on a conservation issue and present their viewpoints to a peer audience

FISH 612
In this course students will:

1) Learn how to measure biological diversity across biological scales (genes to landscapes) and geographical scales (local to global), proximate and ultimate threats to biodiversity, and consequences of biodiversity loss
2) Develop an understanding of important primary literature **through written synthesis, critical analysis, and discussion** of case studies that emphasize conservation issues in aquatic ecosystems
3) **Practice articulating, through writing and discussion, the importance of published research studies to the broader body of research and/or theory on the subject**
4) Become familiar with analytical tools and approaches in conservation science, such as population viability analysis and spatial conservation planning
5) Gain awareness about historical and contemporary issues in aquatic conservation
6) **Build skills in leading class discussions of the literature, including preparing discussion materials and facilitating participation by all students**
7) Develop a position paper on a conservation issue and present their viewpoints to a peer audience