COLLEGE OF FISHERIES
AND OCEAN SCIENCES

University of Alaska Fairbanks
P.O. Box 757220, Fairbanks, Alaska 99775-7220

MEMORANDUM

TO: Dr. Susan Henrichs, Provost
University of Alaska Fairbanks

THRU: Dr. Trent Sutton, Associate Dean for Academic Programs
College of Fisheries and Ocean Sciences

DocuSigned by:
8688705E293D406...

FROM: Dr. Amanda Kelley, Assistant Professor
Department of Marine Biology
College of Fisheries and Ocean Sciences

DATE: August 18, 2017

SUBJECT: Proposed lab fee for *MSL/Marine Biology 394 Aquatic Invertebrate Zoology*

GPMSL requests to charge fees for a new course titled "Aquatic Invertebrate Zoology", *MSL/Marine Biology 394*. The requested fee will be used to cover the costs associated with laboratory section of this course, including the purchase and preparation of specimens and associated consumables. We propose a fee of $75, which is equal to the current charge issued for *BIO F305*, Invertebrate Zoology. Additionally, the proposed fee is equivalent to fees charged for other courses with lab sections, such as *FISH 315 Freshwater Fisheries Techniques* ($75) and *FISH 427 Ichthyology* ($70).

If you require any additional information, you can contact the class instructor Amanda Kelley (x2474). We appreciate your consideration of this request.

Sent original to Provost
8.21.17

FORMAT 1

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 (Attach copy of syllabus)

SUBMITTED BY:

Department	GPMSL	College/School	CFOS
Prepared by	Amanda L. Kelley	Phone	(907) 474-2474
Email Contact	alkelley@alaska,edu	Faculty Contact	Amanda Kelley

1. *ACTION DESIRED (CHECK ONE):*	Trial Course	X	New Course		
2. *COURSE IDENTIFICATION:*	Dept	MSL/Marine Biology	Course #	394	No. of Credits: 4

Justify upper/lower division status & number of credits:	This is an upper division course that will build on knowledge gained from lower division courses (listed as prerequisites- MSL 211and 212 or BIOL 115 and 116 and CHEM 105). Students will be required to read peer-review research articles, synthesize information and write a report about a chosen aquatic invertebrate. Students will also be require to give a presentation on a chosen aquatic invertebrate.
3. *PROPOSED COURSE TITLE:*	Aquatic Invertebrate Zoology

4. *To be CROSS LISTED?* *YES/NO*	YES	If yes, Dept:	FISH	Course #	394

NOTE: Cross-listing requires approval of both departments and deans involved. Add lines at end of form for additional required signatures.

5. *To be STACKED?** *YES/NO*	NO	If yes, Dept.		Course #	
How will the two course levels differ from each other? How will each be taught at the appropriate level?:					

* Use only one Format 1 form for the stacked course (not one for each level of the course!) and attach syllabi. 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.

6. *FREQUENCY OF OFFERING:*	Fall, even years
	Fall, Spring, Summer (Every, or Even-numbered Years, or Odd-numbered Years) – or As Demand Warrants
7. *SEMESTER & YEAR OF FIRST OFFERING* (Effective AY2015-16 if approved by 3/31/2015; otherwise AY2016-17)	Fall 2018

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*	X *6 weeks to full semester*
OTHER FORMAT (specify)											
Mode of delivery (specify lecture, field trips, labs,	Lecture, laboratory.										

etc)	

9. CONTACT HOURS PER WEEK:	3	LECTURE hours/weeks	3	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):***

Example of a complete description:

FISH F487 W, O Fisheries Management
3 Credits Offered Spring
Theory and practice of fisheries management, with an emphasis on strategies utilized for the management of freshwater and marine fisheries. *Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; ENGL F414; FISH F425; or permission of instructor.* Cross-listed with NRM F487. (3+0)

MSL F394 Aquatic Invertebrate Zoology
4 credits
Development, reproduction, physiology, body structure and function, and sexual systems of aquatic invertebrates. *Prerequisites: MSL 211and 212 or BIOL 115 and 116 and CHEM 105; or permission from the instructor.* Cross-listed with FISH 394. (3 + 3).

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:**	**X**

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

O = Oral Intensive, **Format 6**		W = Writing Intensive, **Format 7**		X = Baccalaureate Core	

11.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**	

12. ***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 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: Changing the grading system for a course later on constitutes a Major Course Change – Format 2 form.*

LETTER: X PASS/FAIL:

RESTRICTIONS ON ENROLLMENT (if any)

14. *PREREQUISITES*: MSL 211 and 212 or BIOL 115 and 116, and CHEM 105, or permission of instructor.

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

15. *SPECIAL RESTRICTIONS, CONDITIONS*:

16. *PROPOSED COURSE FEES*: Yes

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

17. *PREVIOUS HISTORY*

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

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

18. *ESTIMATED IMPACT*

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

This course will be part of my teaching workload. I do not intend to offer this course by distance delivery. This course has a laboratory component which will require use of a teaching laboratory. CFOS has use of AHRB 1W09 which will work well for this course.

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: X

I have contacted the library development officer regarding the needs for this course (spoke on the phone 8/17/2017).

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 is intended to provide a focused curriculum on aquatic invertebrates for the undergraduate students in the CFOS program. The Biology Department has an Invertebrate Zoology course listed (BIOL 305) that covers both terrestrial and aquatic invertebrates, but this class has not been taught since 2011 and there is currently no instructor in the Biology Department for this course. In the fall of 2017 I will teach BIOL 305 as a cross-listed course. The intention is for me, as a new faculty member, to incorporate this course into my regular course load. Moreover, this course now meets a requirement for the new Fisheries and Ocean Sciences BS degree. Thus, it is desirable to create a course that resides in CFOS and emphasizes marine taxa, such that we can ensure the needs of our students are served.

21. *POSITIVE AND NEGATIVE IMPACTS*

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

This is a specialized course that is designed for Fisheries and Ocean Sciences students (although open to anyone who meets the prerequisites). There appear to be no negative impacts from this course proposal

on other courses or programs.

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.

The study of aquatic invertebrates is an integral part of understanding any aquatic ecosystem. Specifically, undergraduate students in the CFOS program will benefit from this course because it will include curriculum specific to our programs in Fisheries and Ocean Sciences. The curriculum will cover the major taxa that inhabit the marine environment, as well as those that dwell in freshwater ecosystems. The exclusion of terrestrial invertebrates (which are included in the Biology Department Invertebrate Zoology course) will allow me to really focus on the major phyla in these environments, and examine, with the students, the different evolutionary strategies used to persist in aquatic environments.

APPROVALS: Add additional signature lines as needed.

DocuSigned by: Matthew Wooller 01DDF970CA45479...	Date	8/18/2017	
Signature, Chair, Program/Department of:	Marine Biology		
DocuSigned by: [signature] 868B705E293D406...	Date	8/18/2017	
Signature, Chair, College/School Curriculum Council for:	CFOS		
DocuSigned by: [signature] 868B705E293D406...	Date	8/18/2017	
Signature, Dean, College/School of:	CFOS		

Offerings above the level of approved programs must be approved in advance by the Provost.

	Date	
Signature of Provost (if above level of approved programs)		

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)

DocuSigned by: Milo Adkison 2A9B41C6DDE8D46...	Date	August 18, 2017
Signature, Chair,	Fisheries	

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

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.

5/21/2013

Syllabus

MSL 394: Aquatic Invertebrate Zoology
Credits: 4
Class Schedule: Fairbanks Prerequisites: MSL 211, 212 or BIOL 115, 116, and CHEM 105
Instructor: Dr. Amanda Kelley Class location and time TBD
College of Fisheries and Ocean Sciences
Office: Irving II rm 331
Phone: (907) 474-2474
Email: alkelley@alaska.edu
Office hours: TBD

Course Description: Development, reproduction, physiology, body structure and function, and sexual systems of aquatic invertebrates.

Overview: This course will examine the tremendous diversity among aquatic invertebrates- both marine and freshwater, through lectures and laboratory exercises. We will focus on the evolutionary relationships between and among groups by discussing different adaptive strategies, including development, reproduction, physiology, body structure and function, and sexual systems of such groups. Labs will focus on making and recording observations, including the use of microscopes, drawings, and recording the information in a lab notebook.

Course Goals: The goal of this course is to introduce students to the field of aquatic invertebrate zoology by learning techniques biologists use to identify and group species. After taking this course, students should be able to apply this knowledge in other fields, including marine biology, fisheries, global change biology, the study of invasive species, and comparative physiology, for example.

Specific Learning Objectives:

(1) Learn all the major groups of aquatic of invertebrates.
(2) Learn to identify major phyla based on approaches learned in lecture and lab.
(3) Discuss the role aquatic invertebrates play in ecosystem processes.
(4) Understand major events in the evolutionary history of aquatic invertebrates.
(5) Be able to identify major anatomical structures in diverse aquatic invertebrate species.
(4) Understand the different approaches to classifying animal relationships- cladistics (phylogenetic systematics) vs taxonomy (binomial nomenclature).
(5) Understand the impact invertebrates have on human society.
(6) Learn to organize and keep a laboratory notebook.

Instructional method:

This class will be use multiple modes of learning, including: lecture, small group discussion, presentations, laboratory studies and scientific literature/current events in science.

Course reading (required):

Assigned reading will include scientific literature (posted on blackboard), textbook, web pages.
Textbook: Biology of the Invertebrates, Pechenik, 7th edition, 2015.

Class Evaluation:

Midterm #1.....20 points
Midterm #2.....20 points
Lab quizzes.....6 points
Lab notebook.....4 points
Lab practical (2).....10 points
Independent research project.....10 points
Research project presentation.....5 points
Final exam.....20 points
Class assignments.....5 points
Total.....100 points

Grading:

90-100%	A
80-89%	B
70-79%	C
60-69%	D
< 59%	F

Course Schedule

Week	Topic	Reading
1	Introduction, review syllabus	
1	Classification/Protozoa	Chp. 3
1	Protozoa Lab	
1	Protozoa	Chp. 3
2	Labor day, no class!	
2	Porifera	Chp. 4
2	Porifera Lab	
2	Porifera	Chp. 4
3	Cnidaria	Chp. 6
3	Cnidaria/Ctenophora	Chp. 6
3	Cnidaria and Ctenophora Lab	
3	Ctenophora	Chp. 7
4	Platyhelminthes	Chp. 8
4	Nemertea	Chp. 11
4	Platyhelminthes, Nemertea, Rotifera Lab	
4	Rotifera	Chp. 10
5	Mollusca	Chp. 12
5	Mollusca	Chp. 12
5	Mollusca Lab	

5	Class discussion: Mollusc evolution	research paper: Phylogenomics reveals deep molluscan relationships Nature, 2011
6	Mollusca	Chp. 12
6	Mollusca	Chp. 12
6	Mollusca Lab	
6	Lecture Miterm I	
7	Lophophores	Chp. 19
7	Class discussion:	research paper: Palaeontology: Ancient worms in armour Nature, 2008
7	Lab Midterm + Lophophorates Lab	
7	Annelida	Chp. 13
8	Annelida	Chp. 13
8	Annelida	Chp. 13
8	Annelida Lab	
8	Arthropoda	Chp. 14
7	Class discussion: Pycnogonids	research paper: Temperature-Oxygen Interactions and the Evolution of Giant Antarctic Sea Spiders FASEN, 2017
9	Arthropoda	Chp. 14
9	Arthropoda + (Tardigrad, Onychophora, Nematoda) Lab	
9	Arthropoda	Chp. 14
10	Arthropoda	Chp. 14
10	Arthropoda	Chp. 14
10	Arthropoda Lab	
10	Lecture Miterm II	
11	Class discussion	research paper: Echinoderms as experimental

		models
11	Echinodermata	Chp. 20
11	Echinodermata Lab	
11	Echinodermata	Chp. 20
12	Echinodermata	Chp. 20
12	Echinodermata Lab	
12	Echinodermata	Chp. 20
12	Echinodermata	Chp. 20
13	Research paper project discussion	
13	Class discussion	research paper: Regulatory Blueprint for a Chordate Embryo Science, 2006
13	Thanksgiving - no lab	
13	Thanksgiving - no class	
14	Chordata	Chp. 23
14	Hemichordata	Chp. 21
14	Chordata, Hemichordata Lab	
14	Invertebrates and society	research paper: Aquatic food security
15	Climate change impacts on invertebrates	research paper: IPCC Climate Change 2014: Impacts, Adaptation, and Vulnerability
15	Project Presentation/research paper due	
15	Lab Final (cumulative, 75% new material, 25% old material)	
15	Review for final	
16	Final exam	

Independent Research Project and Presentation:

Undergraduate research is considered a "high-impact practice" by the Association of American Colleges and Universities (https://www.aacu.org/leap/hips). The goal of this research project for this course is to involve students with actively contested questions, empirical observation, cutting-edge technologies, and the sense of excitement that comes from working to answer important questions.

The research project will be a review of current peer-reviewed literature. Students will pick an aquatic invertebrate to investigate. Students will generate a research outline which will be reviewed by the instructor. Using peer-reviewed research articles, students will then write a five page single spaced (no larger than 12 font) research paper (Abstract, Introduction, Methods, Discussion, and Conclusion). See class schedule for the research paper timeline- in red above. Finally, students will give a 12 minute presentation based on the results of their particular research project, with 5 minutes for questions from the audience. A grading rubric will be used to standardize the evaluation process for both the paper and the presentation.

Course Policies:

(1) Attendance: Students are expected to attend all scheduled classes, and are responsible for all material presented in lecture, and in the assigned readings. Students who miss class are welcome to ask to borrow the notes of their classmates; the instructors will not be responsible for providing notes. Please note that no in-class quizzes or participation points can be made up, regardless of the reason for missing class.

Expectations for lab attendance follow the above and have the following additional specifications: labs are only set up for a few days each week, so there is little opportunity to make-up a missed lab. Lab attendance and participation are part of your grade and there will be no opportunity to review the missed material if you do not attend lab. Note that labs meet once a week for three hours – FYI.

(2) Exams and Quizzes: Exams will be based on any material covered during the lecture period or assigned in the reading may be included in the lecture exams. This can include textbook illustrations, films, Powerpoint slides, and actual lectures. Take notes! Quizzes may be given at any time during lecture or lab, and there will be no make-up quizzes. You must arrive within 5 minutes after the start of lecture or lab in order to take the quiz. Make-up exams will only be available in cases of medical and/or family emergencies, or for official UAF activities (in which case the instructor should be contacted a minimum of two weeks in advance). The student is responsible for scheduling timely make-up exams with the instructor.

(3) Support and Disability Services: The Office of Disability Services can be reached by phone- (907) 474-5655, or email- fydso@uaf.edu, and can be located in WHIT 203 on the UAF campus. The Office of Disability Services is available for students with physical or learning disabilities. If you feel that you are differently abled and need these services, please contact the office or ask the instructor to make arrangements.

(4) Courtesy: Please turn off all audible sounds to any electronic devices (phones, laptops, tablets etc.) while in lecture. Refrain from using your laptops for activities not related to lecture during class time, e.g. emailing or browsing the web. Use of these items is strictly prohibited during exams. Students are free to record lectures. You may bring food or drink in the classroom unless otherwise instructed, for example when shared computers are in use.

(5) Plagiarism and academic integrity: Plagiarism will not be tolerated in any way during this course. All assignments are expected to consist of students' original ideas and/or information from properly cited published sources. Students may seek assistance with proper referencing of

scientific literature from the instructor as needed. Students are expected to conduct themselves according to the UAF Student Code of Conduct, which can be found in the course catalog. Failure to comply with these guidelines will result in a failing grade, and the student may face consequences at the university level, depending on the severity of the offense. I also use a ***program that can identify plagiarism from any internet source***. So please consider this when contemplating using cut and paste for your assignments and research project.