

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
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SUBMITTED BY:

Department	Marine Science and Limnology	College/School	SFOS
Prepared by	Andrew McDonnell	Phone	907-474-7529
Email Contact	amcdonnell@alaska.edu	Faculty Contact	Andrew McDonnell

1. ACTION DESIRED*(CHECK ONE):*

Trial Course

New Course

2. COURSE IDENTIFICATION:

Dept

MSL

Course #

294

No. of Credits

3

Justify upper/lower division status & number of credits:

This course provides an excellent follow on study to topics learned in 100 level courses in ocean, geological, and atmospheric sciences. As such, this class fits the criteria of a lower division course as defined in University regulation 10.04.090. Three hours of lecture along with the requisite outside study are commensurate with a 3-credit course.

3. PROPOSED COURSE TITLE:

The Oceans and Global Change

4. To be CROSS LISTED? YES/NO

NO

If yes, Dept:

Course #

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?:

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 (AY2013-14 if approved by 3/1/2013; otherwise AY2014-15)

Fall 2014

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

6 weeks to full semester

OTHER FORMAT
(specify)

Mode of delivery (specify lecture, field trips, labs, etc)

Lectures and in-class discussions

9. CONTACT HOURS PER WEEK:	<input type="text" value="3"/>	LECTURE hours/weeks	<input type="text"/>	LAB hours /week	<input type="text"/>	PRACTICUM hours /week	<input type="text"/>
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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)	<input type="text"/>
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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, 0 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 F294 The Oceans and Global Change

3 Credits Offered Fall Even Years

Explores how global environmental changes are affecting Earth's oceans. Topics include climate change and ocean warming, sea level rise, coastal erosion, declining sea ice, changes in ocean circulation and ecosystems, oceanic uptake of carbon dioxide, ocean acidification, ocean pollution, dead zones, and climate engineering. The course will investigate the implications of these global changes, with an emphasis on the issues of relevance to Alaska and its residents. *Prerequisites: One of the following: ATM 101X, ENVI F101, GEOG 111X, MSL111X, or MSL211. (3+0)*

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

H = Humanities	<input type="text"/>	S = Social Sciences	<input type="text"/>
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Will this course be used to fulfill a requirement for the baccalaureate core? If YES, attach form.	YES:	<input type="text"/>	NO:	<input checked="" type="text" value="x"/>
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IF YES, check which core requirements it could be used to fulfill:

O = Oral Intensive, Format 6	<input type="text"/>	W = Writing Intensive, Format 7	<input type="text"/>	X = Baccalaureate Core	<input type="text"/>
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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	<input type="text"/>	NO	<input checked="" type="text" value="x"/>
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12. COURSE REPEATABILITY:

Is this course repeatable for credit?	YES	<input type="text"/>	NO	<input checked="" type="text" value="x"/>
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Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).	<input type="text"/>
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How many times may the course be repeated for credit?	<input type="text"/>	TIMES
If the course can be repeated for credit, what is the maximum number of credit hours that may be earned for this course?	<input type="text"/>	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:

PASS/FAIL:

RESTRICTIONS ON ENROLLMENT (if any)

14. PREREQUISITES

One of the following: ATM 101X, ENVI F101, GEOG 111X, MSL111X, or MSL211

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

No

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

18. ESTIMATED IMPACT

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

Need for classroom space with videoconferencing capabilities. This course will be a part of the instructor's normal workload teaching assignment in SFOS, so it will not have any additional impacts on budgets or faculty workload assignments beyond what is already being accounted for.

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

Resources are all available freely online, as electronic resources from the UAF library, or will be provided in class.

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)

The minor in Marine Science will benefit by gaining another course option in a program that currently has few offerings. This will give more students a better opportunity to complete the minor and find the appropriate course to fit their schedules and needs. No similar course exists in the curriculum or in other programs/departments at UAF, thus there is a need to cover this critically important and relevant subject material.

21. POSITIVE AND NEGATIVE IMPACTS

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

This course allows students to expand on the principles introduced in introductory courses on the Earth

and its oceans. No negative impacts are expected by offering this course.

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 minor in Marine Science is in need of additional course options and this course will help fill that need. Increasingly, issues of global change and their effect on the oceans and the resources they provide are of high relevance to the global environment and our daily lives as humans. These issues are also very important for Alaska and Alaskan residents. For these reasons, this course will enhance the quality and breadth of UAF education.

APPROVALS: Add additional signature lines as needed.

SEE ATTACHED SIGNATURES

	Date	
Signature, Chair, Program/Department of:		

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

	Date	
Signature, Dean, College/School of:		

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

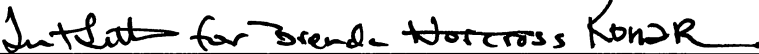
	Date	
Signature, Chair Faculty Senate Review Committee: __Curriculum Review __GAAC		
 __Core Review __SADAC		

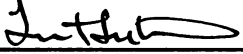
ADDITIONAL SIGNATURES: (As needed for cross-listing and/or stacking)


	Date	
Signature, Chair, Program/Department of:		

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

APPROVALS: Add additional signature lines as needed.

	Date	12/13/2013
Signature, Chair, Program/Department of: <u>GPMSL</u>		

	Date	12/17/2013
Signature, Chair, College/School Curriculum Council for: <u>SFOS</u>		

	Date	Dec 18, 2013
Signature, Dean, College/School of: _____		

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: <input type="checkbox"/> Curriculum Review <input type="checkbox"/> GAAC <input type="checkbox"/> Core Review <input type="checkbox"/> 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: _____		

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

The Oceans and Global Change
MSL F294

Instructor:

Dr. Andrew McDonnell
Assistant Professor of Oceanography
School of Fisheries and Ocean Sciences
907-474-7529
amcdonnell@alaska.edu
Office: 231 Irving II
Office Hours: Tuesday & Thursday, 2-3 pm

Class meeting times: TBD

Location: TBD

Prerequisites: None

3 credits

Course Description:

Explores how global environmental changes are affecting Earth's oceans. Topics include climate change and ocean warming, sea level rise, coastal erosion, declining sea ice, changes in ocean circulation and ecosystems, oceanic uptake of carbon dioxide, ocean acidification, ocean pollution, dead zones, and climate engineering. The course will investigate the implications of these global changes, with an emphasis on the issues of relevance to Alaska and its residents.

Course Goals

The goal of this course is to gain an understanding of the ocean's role in global environmental change, and how these processes are influenced by and affect human activities.

Learning Objectives

- Understand how the oceans operate as part of the broader earth system
- Learn about how human activities impact the oceans
- Develop the ability to analyze, interpret, connect, and discuss earth system data as indicators of change
- Learn about uncertainty in global change science and how scientific inquiry can reduce uncertainties
- Evaluate the potential societal, economic, security, and cultural implications of our changing oceans
- Understand the role of oceanic changes in the context of current events
- Assess the feasibility of deliberate actions to mitigate global change and its impacts

Instructional methods

This course will achieve the intended learning outcomes through the use of lectures, demonstrations, and group discussions of our changing oceans.

Textbook

The course will rely primarily on the following free online textbook:

Our Ocean Planet **Oceanography in the 21st Century**
<http://oceanworld.tamu.edu/resources/oceanography-book/contents.htm>

Additional readings will be assigned from various sources that are available as free electronic resources from the UAF Library or distributed as electronic documents ahead of class. See the end of this syllabus for a list of the resources we will be utilizing.

Homework Assignments

The homework assignments are essential to meeting the course learning objectives. Assignments will focus on both a conceptual and quantitative understanding of the subject material. Students are encouraged to utilize the instructor's scheduled office hours if assistance is needed to complete the assignments. Each homework assignment is worth 100 points. A total of 5 assignments will be given, making for a total of 500 points possible in the Homework grading category. These points will be weighted to account for 25% of the total grade. Late submissions of homework will be penalized 20 points for each day after the specified deadline.

Quizzes

A total of 10 short quizzes will administered at unannounced times during the lectures. The Quizzes will evaluate your basic understanding of the key concepts presented in the lectures and the readings. You are allowed to use any notes you have made. Quizzes cannot be made up at a later time (unless you have notified the instructor of an excused absence ahead before the class session in which the quiz is administered). For this reason is important that you attend all class sessions and pay attention to the material we cover during class. Each quiz is worth 10 points, making for a total of 100 possible points on quizzes. These points will be weighted to account for 10% of the total grade.

Midterm Exams

Two Midterm Exams will be given during class period (see calendar). Exams are closed book. Each Mid-Term Exam is worth 100 points, and each exam will be weighted to account for 20% of your total course grade.

Final Exam

A written final exam will be administered during the assigned final exam period. It will focus on evaluating your conceptual understanding of the topics covered in the course and demonstrating your ability to quantitatively interpret earth system data. The exam is closed book. The exam will be worth 100 points and will be weighted to account for 25% of your total course grade.

Grade Weighting

Points totals from each of the following categories will be weighted according to the following scale in order to obtain an overall percentage course grade.

- 25% Homework Assignments
- 10% Quizzes
- 20% Mid Term Exam 1
- 20% Mid Term Exam 2
- 25% Final Exam (Comprehensive)

Grading Scale

After weighting the total scores from each category according to the weights specified above, total grade percentages will be rounded to the nearest whole percentage point and letter grades will be assigned according to the following scale:

Total Grade Percentage	Letter Grade
94-100	A
90-93	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-

67-69	D+
63-66	D
60-62	D-
<60	F

Course Policies

All students are expected to adhere to the Code of Conduct and other policies described in the University of Alaska Fairbanks Catalogue. Infractions related to the Code of Conduct may result in a grading penalty or disciplinary action.

Support Services

Students are encouraged to visit the instructor's office hours for additional help with course concepts, assignments, and exam preparation.

Disability Services:

At UAF, the Office of Disability Services (203 WHIT; 474-5655; TTY 474-1827; fydso@uaf.edu) ensures that students with physical or learning disabilities have equal access to the campus and course materials. If you have specialized needs, please contact this office or the instructor to make arrangements.

Class Calendar

Week	Topics	Assignments	Reading
1	Introduction, course overview		
2	Oceans as part of the Earth system	Homework 1 Assigned	Stewart, Introduction
3	Natural variability in climate	Homework 1 Due	Stewart, 2.1
4	Global climate change	Homework 2 Assigned	Stewart, 2.2
5	Global climate change	Homework 2 Due	Stewart, 2.3
6	Ocean warming	Mid-Term 1	
7	Ocean influence on storms and precipitation		Stewart, 3.7
8	Sea level rise, coastal erosion	Homework 3 Assigned	Weisse
9	Changes in ocean circulation	Homework 3 Due	Handout
10	Carbon dioxide and ocean acidification	Homework 4 Assigned	Doney
11	Effects on Ecosystems and Fisheries	Homework 4 Due	Handout
12	Nutrient pollution and dead zones	Mid-Term 2	Stewart 4.1, 4.2
13	Climate Engineering		Watts
14	Ocean pollution, oil and mineral extraction from the oceans	Homework 5 Assigned	Stewart, 4.5
15	Societal, economic, security, and cultural considerations	Homework 5 Due	Handout
Finals		Final Exam	

Resources:

Doney, S.C., 2006. The dangers of ocean acidification. *Sci. Am.* 294, 58–65.

Stewart, Robert. Our Ocean Planet

<http://oceanworld.tamu.edu/resources/oceanography-book/contents.htm>

10. Oceanography in the 21st Century

Watts, Robert G., Engineering Response to Climate Change: Planning a Research and Development

Agenda, 2nd ed. CRC Press 2013.

Weisse, Ralf, Marine Climate Change: Ocean Waves, Storms and Surges in the Perspective of Climate Change. Springer. 2010.