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Revised 10-UNC sig

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.

NEW COURSE PROPOSAL

SUBMITTED BY:

Department	IMS	College/School	SFOS
Prepared by	Mark Johnson	Phone	474.6933
Email Contact	majohnson@alaska.edu	Faculty Contact	Mark Johnson

1. ACTION DESIRED (CHECK ONE):
 Trial Course New Course

2. COURSE IDENTIFICATION:
 Dept: Course #: No. of Credits:

Justify upper/lower division status & number of credits:
 Advanced undergraduate course to complete minor in marine science and provide foundation for graduate students in marine science and oceanography

3. PROPOSED COURSE TITLE:

4. To be CROSS LISTED? YES/NO
 If yes, Dept: Course #:
 (Requires approval of both departments and deans involved. Add lines at end of form for such signatures.)

5. To be STACKED? YES/NO
 If yes, Dept: Course #:

6. FREQUENCY OF OFFERING:

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

7. SEMESTER & YEAR OF FIRST OFFERING (AY2011-12 if approved by 3/1/2012; otherwise AY2012-13)

8. COURSE FORMAT:

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

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

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

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

MSL420, Concepts in Physical Oceanography, 3 credits. Concepts in Physical Oceanography establishes the physical concepts that account for fluid motion of the oceans on our rotating earth. This course will include the role of the Coriolis force, ocean stratification, wind driven and thermohaline circulation, tides and the major ocean gyres and why they are present. The physical forces that influence biological production will be presented. These foundation concepts will be part of a well-rounded undergraduate program in marine science or establish the foundation for graduate students. (3+0) Offered Alternate Fall
 Prerequisites: College level Calculus and/or Physics or instructor's permission.

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

H = Humanities S = Social Sciences

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

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

12. **COURSE REPEATABILITY:**

Is this course repeatable for credit? YES NO

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

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

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

LETTER PASS/FAIL:

RESTRICTIONS ON ENROLLMENT (if any)

14. **PREREQUISITES** ~~MSL 2115 etc. or permission of instructor~~ College level Calculus and/or Physics or permission of instructor
These will be required before the student is allowed to enroll in the course.

15. **SPECIAL RESTRICTIONS, CONDITIONS** none

16. **PROPOSED COURSE FEES** \$0
Has a memo been submitted through your dean to the Provost for fee approval? Yes/No 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.

Regular classroom space will be needed, instructor salary will be covered under the instructor's annual teaching workload.

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 The library (K. Jensen) was contacted on 12 June 2012. All course material will be available through the library, on-line and/or via instructor

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 course offering will improve MSL program's ability to educate undergraduate students in marine science as part of the Minor in Marine Science, and it will prepare them for graduate studies.

21. POSITIVE AND NEGATIVE IMPACTS

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

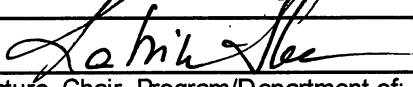
No negative impacts are expected.

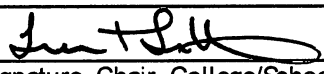
JUSTIFICATION FOR ACTION REQUESTED


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.

A course on the physical concepts of oceanography is currently missing from the course offerings for the new Minor in Marine Science at UAF. The instructor has decades of teaching and research experience that will be applied to ensure that this program does not lower UAF standards.

APPROVALS: Add additional signature lines as needed.

 Date 7/24/12
Signature, Chair, Program/Department of: GPMSL

 Date 7/24/12
Signature, Chair, College/School Curriculum Council for: SFOS

 Date Aug 1, 2012
Signature, Dean, College/School of: STOJ

Date _____

Signature of Provost (if applicable)

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

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

Date _____

Signature, Chair

Faculty Senate Review Committee: ___Curriculum Review ___GAAC

___Core Review ___SADAC

Revised 3/25/13

1. Course information:

Title: Concepts in Physical Oceanography

Number: MSL419

Credits: 3

Prerequisites: College physics or calculus or permission by instructor

Location: TBD

Meeting time: TBD

2. Instructor information:

Name: Mark Johnson

Office location: O'Neill 111

Office hours: MWF 11am-12pm and by appointment

Telephone: 474.6933

Email address: majohnson@alaska.edu

3. Course readings/materials:

Course textbook title: Invitation to Oceanography

Author: Paul R. Pinet

Edition/publisher: Jones and Barlett Publishers, LLC

Supplementary required readings:

See Course calendar and lecture assignments for readings in these texts:

Introductory Dynamical Oceanography by Stephen Pond and G. Pickard

Dynamics of Marine Ecosystems by Kenneth Mann and John Lazier

Introduction to Physical Oceanography by John A. Knauss

Descriptive Physical Oceanography by George L. Pickard and William J. Emery

Introduction to Physical Oceanography by Robert H. Stewart

Supplies required: none

4. Course description:

Content of the course and how it fits into the broader curriculum:

Course content includes descriptions of the physical forces that drive fluid motion critical to an understanding of fisheries, marine biology and oceanography.

Expected proficiencies required to undertake the course, if applicable.

Students will be expected to think quantitatively. Prior exposure to calculus and physics is helpful but not necessary.

Inclusion of catalog description is strongly recommended:

Concepts in Physical Oceanography establishes the physical concepts that account for fluid motion of the oceans on our rotating earth. This course will include the role of the Coriolis force, ocean stratification, wind driven and thermohaline circulation, tides and the major ocean gyres and why they are present. The physical forces that enhance biological production will be presented. These foundation concepts will be part of a

well-rounded undergraduate program in marine science or establish the foundation for graduate students.

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

The goal of the course is to provide the advanced undergraduate with a conceptual overview of physical oceanography to ensure undergraduates in marine science are exposed to oceanography topics that are essential to understanding fisheries, marine habitats and global climate. This course also serves to complete the foundation for graduate students pursuing careers in marine science and related fields.

6. Student Learning Outcomes (more specific)

- Students learn how to quantitatively think about the forces that drive upwelling, tides, waves and the major currents of the surface and deep ocean
- Students gain an understanding of oceanography concepts and will interpret graphs and diagrams that visually demonstrate the mathematical relationships fundamental to physical oceanography
- Students are able to relate biological patterns in the oceans to physical drivers of these patterns

7. Instructional methods:

Describe the teaching techniques: lecture, case study, reading, self-teaching

8. Course calendar:

The schedule below shows I will not be making it up on the fly, a surprising concern raised in the application form. Each lecture is 2-hours for a total of 40 hours or 2400 minutes per Faculty Senate rules.

LECTURE	SUBJECT	ASSIGNED READING
1	Introduction	Stewart Ch 1; P&P Ch 1
2	Bathymetry, Basin Geomorphology	P&E Ch 2.
3	Density and the Equation of State	Knauss Ch 1; Stewart Ch 3;
4	Vertical Mixing	P&P Ch 5;
5	Stratification	P&P Ch 5; Knauss Ch 2;
	Air-sea fluxes	Knauss Ch 3;
6	Ocean heat budget	P&E Ch 5;
7	Fundamental Concepts (Total Derivative, Lagrangian-Eulerian reference frames, centrifugal-centripetal force)	P&P Appendix I
8	The Coriolis effect	P&P Ch 6, pps 36-38; Knauss p 90; M&L pps 111-116;
9	The Equations of Motion and Reynolds stresses	P&P Ch 8 pps 65-67; Knauss pps 108-116;
10	Geostrophy and pressure gradients	P&P Ch 8 pps 65-67; Knauss pps 108-115; M&L pps 116-118;
11	Margule's and Thermal Wind relations	Knauss pps 116-117.
12	Ekman dynamics: convergence and upwelling and the relationship to biological production	P&P 106-118; M&L pps 161-175;

13	Vorticity	Stewart Ch 12; P&P pps 144-149;
14	The Sverdrup Balance	P&P Ch 9, pps 118-133;
15	Western Intensification	P&P 149-159; Knauss Ch 7, pps 136-143; M&L297-310; Stewart pps 189-197;
16	Waves	Knauss Ch 10, pps 218-233;
17	Tides and the role in biology	Knauss, pps 218-229.
17	Estuaries and biological productivity	Knauss Ch 11, pps 245-255; M&L 118-121; P&E pps 281-285;
19	Variability and climate change	M&L Ch 10, pps 384-401; selected papers tbd
20	Review; Q&A	

9. Course policies:

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

Rules include no cell phones, no earphones and no disruptive behavior in class. Students with unexcused absences or habitual tardiness will have grades lowered. Class participation is helpful and may earn extra-credit. Make-up exams are possible when arranged in advance. Students who plagiarise will fail and those without academic integrity will be ostracised.

10. Evaluation:

Specify how students will be evaluated:

Students will be evaluated when they ask questions in class and when I grade their exams. There will be a mid-term and final exam, each with the same weight.

What factors will be included:

Evaluation depends on how students answer the exam questions and whether they are prepared when asking questions in class.

Their relative value: 96% on exams and 4% on class participation.

How they will be tabulated into grades (on a curve, absolute scores, etc.):

Grades will be assigned using a curve without the use of "+" or "-". The grading curve will depend on the number of correct answers students provide and cannot be predicted in advance. The applied curve will lead to grades of "A", "B", "C" with perhaps some "D"s and/or "F" grades. The curve will be based on >90%=A, 80-89.9%=B, etc.

Publicize UAF regulations with regard to the grades of "C" and below as applicable to this course. (Not required in the syllabus, but may be a convenient way to publicize this.) Faculty Senate Meeting #171:

Yes

11. Support Services:

Describe the student support services such as tutoring (local and/or regional) appropriate for the course.

The student may ask questions in class, meet with the instructor during office hours, read on his or her own time, or use the web for additional information.

12. Disabilities Services:

The 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. State that you will work with the Office of Disabilities Services
I will work with the Office of Disabilities Services.