**TRIAL COURSE OR NEW COURSE PROPOSAL**

**SUBMITTED BY:**
- **Department:** MSL
- **Prepared by:** Peter Winsor
- **Email Contact:** pwinson@alaska.edu

**College/School:** SFOS
- **Phone:** 907 474 7740
- **Faculty Contact:** Peter Winsor

1. **ACTION DESIRED (CHECK ONE):**
   - Trial Course
   - New Course [X]

2. **COURSE IDENTIFICATION:**
   - **Dept:** MSL
   - **Course #:** 403
   - **No. of Credits:** 3

   Justify upper/lower division status & number of credits:
   - This class is intended for students obtaining a minor in Marine Science, and covers fundamental background, theory, and scientific literature of marine estuaries.

3. **PROPOSED COURSE TITLE:**
   - Estuaries Oceanography

4. **To be CROSS LISTED?**
   - **YES/NO**
   - If yes, Dept: [Blank]
   - Course # [Blank]

   (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: [Blank]
   - Course # [Blank]

6. **FREQUENCY OF OFFERING:**
   - **Fall**
   - Fall, Spring, Summer (Every, or Even-numbered Years, or Odd-numbered Years) — or As Demand Warrants

7. **SEMESTER & YEAR OF FIRST OFFERING (if approved):**
   - Fall 2012

8. **COURSE FORMAT:**
   - COURSE FORMAT:
     - [ ] 1
     - [ ] 2
     - [ ] 3
     - [ ] 4
     - [ ] 5
     - **X** 6 weeks to full semester

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

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/cd/credits.html](http://www.uaf.edu/uafgov/faculty/cd/credits.html) for more information on number of credits.

   OTHER HOURS (specify type)
   - [Blank]

10. **COMPLETE CATALOG DESCRIPTION including dept., number, title and credits (50 words or less, if possible):**
   - MSL 403: Estuaries Oceanography
   - Advanced class for Marine Science minors, offering an overview of the oceanography of estuaries. The class involves lectures, reading assignments, reviewing and criticizing scientific literature.
   - Prerequisites: MSL 213, Stat 200 or permission of instructor. 3 credits (3 + 0).
   - Offered Fall.
11. COURSE CLASSIFICATIONS: (undergraduate courses only. Use approved criteria found on Page 10 & 17 of the manual. If justification is needed, attach on separate sheet.)

H = Humanities
S = Social Sciences

Will this course be used to fulfill a requirement for the baccalaureate core?

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 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?

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

13. GRADING SYSTEM: Specify only one.

LETTER: X PASS/FAIL: |

14. PREREQUISITES

Introduction to Marine Science II (MSL 213), Stat 200 or permission of instructor

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

RECOMMENDED

Classes, etc. that student is strongly encouraged to complete prior to this course.

15. SPECIAL RESTRICTIONS, CONDITIONS

None

16. PROPOSED COURSE FEES

none

Has a memo been submitted through your dean to the Provost & VCAS for fee approval?

N/A

17. PREVIOUS HISTORY

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

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

18. ESTIMATED IMPACT

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

This class will be given by Dr. Winsor as part of his annual teaching requirement. There is no impact expected on budget, facilities or faculty.

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

Communication with Anne Christie (Biosciences Library) has been established

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 proposed new course will have a positive impact on the proposed Marine Sciences Minor program by providing students with an in-depth knowledge of Estuaries, their oceanography and coupled ecosystems.

21. POSITIVE AND NEGATIVE IMPACTS

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

The proposed new course will have a positive impact on the proposed Marine Sciences Minor program by providing students with oceanography experience and scientific literature and writing.
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.

This class is aimed as a higher-level class for the MSL minor program in Marine Science. Currently there is no class within UAF that gives an understanding of estuaries and their oceanography and coupling to ecosystems. Estuaries are areas where all disciplines within marine science meet; physical oceanography, marine biology and fisheries (both freshwater and saltwater). One goal of Estuaries is for students to become familiar with the scientific method, reading substantial scientific literature and perform scientific writing.

APPROVALS:

Signature, Chair, Program/Department of: 6 P0SL
Date 6 Jan 11

Signature, Chair, College/School Curriculum Council for: SPOJ
Date 01/06/11

Signature, Dean, College/School of:

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

Signature, Chair, UAF Faculty Senate Curriculum Review Committee

Date

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

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).
Note: The guidelines are online: http://www.uaf.edu/uafo/faculty/cd/syllabus.html
The department and campus wide 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 change will 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.)

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

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 (208 WHIT, 474-5655) to provide reasonable accommodation to students with disabilities."
MSL 403 ESTUARIES OCEANOGRAPHY
Syllabus – Autumn Semester 2012

Instructor:
Dr. Peter Winsor, Associate Professor of Marine Science.
Rm. 123 O’Neill building
Phone: 474-7740
Email: pwinsor@sfos.uaf.edu

Office hours:
Monday, Wednesday and Friday 11-12 am. In addition, you can also see me at the end of class and we will either meet then, or set up an appointment to meet later. Generally, email is an excellent way to get in touch with me. You may also call or e-mail for an appointment. If you leave a voicemail, please include your e-mail address in your message.

Course Description
Advanced class for Marine Science minors, offering an overview of the oceanography of estuaries. The class involves lectures, reading assignments, reviewing and criticizing scientific literature.
Prerequisites: MSL 213, Stat 200 or permission of instructor. 3 credits (3 + 0).
Offered Fall.

Course Goals and Learning Objectives
This class is intended to be of use to undergraduate and graduate students from all the sciences. While familiarity with physical oceanography and differential equations is useful, it is not required. If there are widely disparate backgrounds, we may make different versions of the problem sets.

We will study the physical-biological coupling in a wide range of estuarine systems from around the world. Students will develop a core understanding of physical and biological processes that can be applied to fisheries, geology and chemical oceanography problems in estuaries and elsewhere.

Topics include tides, vertical mixing, circulation, coastal plain estuaries, hypoxia, harmful algal blooms and plankton distributions within estuaries.

We focus on important physical estuarine processes and their consequences:
  • Effects of circulation and mixing on residence time and patterns of phytoplankton and zooplankton
  • Development of hypoxia and its effects on biology
  • Harmful algal blooms
The course will consist of lectures, reading assignments, student-led discussions of research papers, and occasional guests. Students will write a number of short response essays based on the reading, and a longer paper on a topic of their choice. Students will give a short presentation on their final paper in the last week. There will be a final exam. Each core lecture is followed by assignments and mandatory written work by each student.

Class is given on Monday, Wednesday and Friday at 10:15-11:15. Monday’s are usually devoted to lectures, Wednesday’s we go through literature and reading assignments, and Friday’s are devoted to student presentations and discussions.

This course will give the students a broad base of knowledge of oceanography within estuaries and coupled physical-biological systems. The goal is for each student to develop a toolbox of techniques to apply to various scientific problems they encounter in estuarine systems, and to get exposed to reading, reviewing and criticizing scientific literature.

**Special Needs**
The Office of Disability Services (203 WHIT; 474-7043) implements the American with Disabilities Act and insures that UAF students have equal access to the campus and course materials. Students with disabilities can be assured that they will be provided with reasonable accommodation. If you need course adaptations or accommodations because of a disability, please contact the instructor as soon as possible to make the necessary arrangements. In addition, if extra instruction on equipment usage, explanation of course concepts, or assistance with data analyses is required, the student is encouraged to contact the instructor and/or teaching assistant.

**Reading assignments**
Required text for Estuaries 403 is Dyer, K. R., 2011: Estuaries: Dynamics, Mixing, Sedimentation and Morphology, Cambridge University Press. This book is available from the University bookstore and online and is not very expensive.


Copies of scientific papers needed for class will be handed out during class and will also be available online via UAF Blackboard.

**Exams and Reading Essays**
A final exam will be administered during the semester and is valued at 125 points. In all cases, students will not be allowed to retain copies of the final exam. The reading essays are in the form of a "Reading Question" (RQ), where the student is asked to formulate
(and attempt to answer) a detailed question based on reading of a scientific paper. This is intended as practice in analytical, critical reading and writing. Detailed comments will be given on each student's essays.

There will also be four Quizzes given during the semester based on the topics covered in the class. Extra credit writing assignments will be handed out. These are for extra credit only and are not required.

**Class participation**
Students are expected to attend class. During a recent semester, even though there was no direct penalty for non-attendance, the average success of students who did not attend regularly was poor. Assignments and RQ's will be presented, assigned and handed out at each lecture so it is important to be present.

**Course Policies**
Students should be familiar with the UAF Honor Code, which can be found in the course catalog. All written work, including projects, class questions, reports, and extra credit reviews, must be the work of the student submitting it and not copied from another source, such as another student (past or present).

Incomplete (I) will be given only to those students who have received permission from the instructor to complete course work after April 30 (final exam day). In accordance to UAF policy Incomplete grades will be changed to an “F” grade.

**Grading**
Grading will be based on your point total for the semester, as follows:

- **Quizzes (4):** up to 50 points
- **RQ #1:** up to 50 points
- **RQ #2:** up to 50 points
- **RQ #3:** up to 50 points
- **RQ #4:** up to 50 points
- **Final exam:** up to 125 points

**Total:** 275 points

Extra Credit hand in assignments: up to 20 points. Late assignments will be docked 10% of the total point value for each day late and missed exams will be assigned a zero score.

**Grading scale:**

- 248 points and above = A
- 220 to 247 points = B
- 192 to 219 points = C
- 165 to 191 points = D
- 164 points and below = F
The grading policy will not use (+/-) values.

The grading scale is based in 10% steps. The instructors may adjust the grade boundaries somewhat, if warranted based on evidence of student participation and learning. This rarely occurs except at the lower boundaries for C and D grades.

**MSL 403 ESTUARIES OCEANOGRAPHY**

**Tentative Schedule**

Each week has three lectures (Monday, Wednesday and Friday). Generally, Monday lectures go through relevant chapters from the class books and prepare the students for the Wednesday literature assignments. Friday’s are devoted to student presentations and discussions.

**Week 1: Introduction: What estuaries are like and why**
- Class organization, estuary and fjord definitions, water quality and habitat issues.
- Geomorphology: how do estuaries evolve over interglacial time scales (erosion, deposition, sea level rise, biological effects)? Classification: the range of observations and the quest for simple explanations.
- Simple mass and salt conservation: Knudsen's Relation

**Week 2: Tides**
- Definitions, Celestial Forcing, Equilibrium Tides.
- Solutions in bays (1/4 wave oscillator)
- Tidal excursion, ellipse, prism.
- Spring and neap: effects of multiple frequencies.
- Effects of friction and non-linearity: ebb and flood dominance, phase shifts, residuals, and overtides.
- Influence on marine biology and fisheries.
- *Lavelle et al. (1988) Model of Puget Sound Tides*

**Week 3: Turbulence: Vertical Fluxes of Momentum and Buoyancy**
- Microstructure Measurement
- Boundary layers, log layer, drag coefficient, wind stress
- Tidal Mixing
- Critical Richardson Number
- *Seim and Gregg (1994) Admiralty Inlet Mixing*

**Week 4: Flow Over Sills & Through Contractions**
- One- and 2-Layer Hydraulics
- Strait of Gibraltar
- Bosporus to Black Sea
- Wesson and Gregg (1994) Gibraltar

**Week 5: Coastal Plain Estuaries**
- Chesapeake Bay
- Tyler and Seliger (1989) Bio-physical Interactions
- Carter and Pritchard (1988) Chesapeake Overview

**Week 6: Fjords**
- Puget Sound
- Cokelet et al. (1991) Pollution Ages in PS
- Ebbesmeyers et al. (1988) PS Overview
- Lavelle et al. (1991) Dense Flow over Admiralty Inlet
- Dyer (1997), Chapter 8.

**Week 7: Well-Mixed Estuaries, Salt Wedges, and Other Effects**
- San Francisco Bay
- Conomos et al. (1985) SF Bay Overview
- Walters et al. (1985) Time Scales of Flow in SF Bay
- Fraser River, Colombia River
- Hughes and Rattray (1980)
- Channel Shape, Headlands, Coriolis, Fronts
- Signell and Geyer (1988) Tidal Flow around a Headland

**Week 8: Development of hypoxia and its effects on biology**
- Gulf of Mexico
- Deep sill fjords
- Baltic Sea

**References:**
Curriculum Committee SFOS

Members: Trent Sutton (Chair)
Katrin Iken
Jeremy Mathis
Andre Lopez

08 December 2010

New Course
Course Number: MSL 403
Course Title: Estuaries
Instructor: Winsor
First Time of Offering: Yes

General Recommendations:

On the last page of the course proposal form is a checklist of components to be included in the syllabus. Be sure to go through this checklist to make sure all components are addressed. Failure to do so could result in the delay of getting this course proposal through the UAF Curriculum Review Committee. Also, undergraduate and graduate students do not like to take 2-credit courses. Consequently, you should expect low enrollment for this course. The Curriculum Committee recommends offering the course for 3 credits.

Faculty Senate Form:

Clarify and Address the following:

• For course identification section, need to state that the proposed Marine Science minor has been submitted concurrently.
• Frequency of offering – every fall? Seems too often as this will most likely be a low demand course.
• The catalog description (section 10) must appear as it will in the actual catalog; you must include the credits, prerequisites, and course format (e.g., 2+0); you only had the course title and description. Your course description must match the syllabus. You listed this as a 3-credit course in this section. Also, the last line of the course description is not reflected in the course content. This course appears to be more focused on physical oceanography and course content does not match the title.
• Course needs to be letter grade. Students will not take a pass/fail course at the undergraduate level.
• Prerequisites – List MSL 212 or concurrent enrollment. No need to include MSL 211 as is a prereq for MSL 212 and is implied.
• Library collections – Need to contact the library and include the date that made the call and talked to Anne Christie. Without that information, this proposal will get rejected by the UAF CRC.
• Estimated impact – Will this course be taught as part of your regular workload? Need to state that the paperwork for the minor has been submitted concurrently.
• Section 21. There are no positive impacts associated with this course?
• Justification. Remove the last line of the justification. Based on the course topics listed on the syllabus schedule, this course will not provide a core understanding of estuaries. This issue must be resolved.

Syllabus:
• Office hours must be listed and posted, cannot be by appointment (UAF policy).
• The course description on the syllabus must match the course description on the form (UAF requirement). Overall, the course description is very vague.
• Need a goal and learning outcomes.
• Course requirements – How many essays, what is short versus long, etc. Need detailed information on course requirements that link back to the course schedule. Are there any exams?
• Need sections on student accommodations and disabilities services.
• For the incomplete grade section. Last line, change to reflect that incompletes will be changed to an F grade (this is UAF policy).
• How many points and percentages to get an A, B, C, etc.? How many total points for the class? Nothing provided on the graded components (points, percentages, grading scale). Need to be very clear in this section.
• Course schedule has no timeline. Where are the readings located? Handouts? On reserve? Blackboard?
• Please proof the syllabus as there are several typographical errors.