



UNIVERSITY OF WASHINGTON

OFFICE OF THE PRESIDENT

Mark A. Emmert, President

November 29, 2007

Interim Dean Ron Irving
College of Arts and Sciences
Box 353765

Dean Arthur R. M. Nowell
College of Ocean & Fishery Sciences
Box 355645

Dear Ron and Arthur:

Based upon the recommendations of the Faculty Council on Academic Standards, the Faculty Council on Tri-Campus Policy has recommended approval of an interdisciplinary minor in Marine Biology. A copy of the proposal is attached.

I am writing to inform you that the College of Ocean and Fishery Sciences and the College of Arts and Sciences is authorized to offer this option beginning autumn quarter 2007 and thereafter.

The new requirements should be incorporated in printed statements and in individual department websites as soon as possible. The *General Catalog* website will be updated accordingly by the Registrar's Office.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Mark".

Mark A. Emmert
President

Enclosure

cc: Ms. Michelle Townsend (with enclosure)
Dr. Rick Keil (with enclosure)
Mr. Robert Corbett (with enclosure)
Dr. Deborah H. Wiegand (with enclosure)
Todd Mildon, J.D. (with enclosure MARINE-20070515)

JUL 03 2007



Creating & Changing Undergraduate Academic Programs*
 After college/school review, send signed original and 8 copies to: University Registrar, 355850

College: COFS and A&S

Department or Unit: School of Aquatic and Fishery Sciences, Oceanography, Dept of Biology

Date: May 15, 2007

New Programs

Leading to a Bachelor of _____ in _____ degree

Leading to a Bachelor of _____ degree with a major in _____

Leading to a _____ Option within the existing major in _____

Leading to an interdisciplinary Minor in **MARINE BIOLOGY**

Proposed Effective Date: (quarter/year) **Fall 2007**

Contact Person	Phone Number	Email
Michelle Townsend	543-5039	mtown@u.washington.edu
Rick Keil	616-1947	rickkeil@u.washington.edu

1. Explanation of and Rationale for Proposed Change: *(Please use additional pages if necessary. For new programs, please include any relevant supporting documentation such as student learning outcomes, projected enrollments, letters of support, and departmental handouts.)*

The Schools of Aquatic and Fishery Sciences and of Oceanography (College of Ocean and Fishery Sciences) and the Department of Biology (College of Arts and Sciences) propose the implementation of a minor in Marine Biology. Currently, UW has no official program in marine biology available for undergraduate students. A three-course honors sequence in marine biology is in place, as is a selection of classes scattered across three campuses (Seattle, Tacoma and Friday Harbor).

The minor offers students an interdisciplinary and flexible Marine Biology track as part of their collegiate studies, regardless of major. Unlike a traditional disciplinary minor that is often selected deep within the tenure of a typical student, students will be encouraged to enroll in the Marine Biology minor within their first two years. The Marine Biology minor is designed to be a compelling draw to the university, and serves as an integrating function within the marine sciences of the university.

Please see the added documentation.

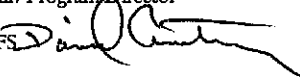
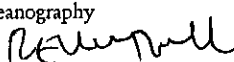
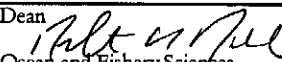
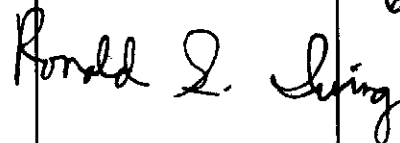


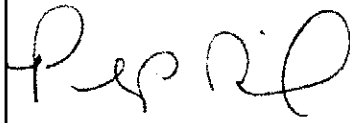


Creating & Changing Undergraduate Academic Programs

2. Catalog Copy

A. Catalog Copy as Currently Written *(Include only sections/paragraphs that would be changed if your request is approved. Please cross out or otherwise highlight any deletions.)*

B. Proposed Catalog Copy, Reflecting Requested Changes *(Include exact wording as you wish it to be shown in the printed catalog. Please underline or otherwise highlight any additions. If needed, attach a separate, expanded version of the changes that might appear in department publications.)*

The minor in Marine Biology is an integrated cross-campus curriculum designed to immerse students in the study of marine organisms and ecosystems. The minor crosses the traditional research and educational boundaries of the University. Students are encouraged to consider the Marine Biology minor within their first two years. The minor draws on a variety of disciplines within Oceanography, Biology and Aquatic Sciences to explore marine organisms, conservation and ecosystem structure from multiple perspectives. The minor cannot be taught entirely within the confines of a classroom, so it is structured to provide ample opportunity for field work and research nestled within the coursework.

Chair/Program Director SAFS  Oceanography  Biology	Date 5/30/07	Dean  Ocean and Fishery Sciences Arts and Sciences 	Date 5/31/07 6/25/07
College Committee SAFS  Oceanography  Biology 	Date 5/30/07 5/29/07 6/25/07	 (Printed Name) Faculty Council on Academic Standards  (Printed Name)	Date 10/5/07 11/2/07

Creating & Changing Undergraduate Academic Programs

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Chair/Program Director SAFS Oceanography Biology <i>Thurman</i>	Date <i>06/04/07</i>	Dean Ocean and Fishery Sciences Arts and Sciences <i>Ronald L. Irving</i>	Date <i>6/25/07</i>
College Committee SAFS Oceanography Biology <i>James P. ...</i> <i>Rep ...</i>	Date <i>6-8-07</i> <i>6/25/07</i>	<i>Greg Hill</i> <i>(Provost for Campus)</i> Faculty Council on Academic Standards	Date <i>10/5/07</i>

INTERDISCIPLINARY MINOR IN MARINE BIOLOGY FEBRUARY 5, 2007

The Schools of Aquatic and Fishery Sciences and of Oceanography (College of Ocean and Fishery Sciences) and the Department of Biology (College of Arts and Sciences) propose the implementation of a minor in Marine Biology. Currently, UW has no official program in marine biology available for undergraduate students. A three-course honors sequence in marine biology is in place, as is a selection of classes scattered across three campuses (Seattle, Tacoma and Friday Harbor).

The minor offers students an interdisciplinary and flexible Marine Biology track as part of their collegiate studies, regardless of major. Unlike a traditional disciplinary minor that is often selected deep within the tenure of a typical student, students will be encouraged to enroll in the Marine Biology minor within their first two years. The Marine Biology minor is designed to be a compelling draw to the university, and serves as an integrating function within the marine sciences of the university.

Principles of the Minor:

1. Marine science and marine biology are fundamentally different from terrestrial biology, although many elements (obviously) are shared. An introductory course establishing the differences and similarities should be required of all Marine Biology students.
2. The structure and function of marine systems are strongly forced by ocean and atmospheric physics. Therefore, no student of Marine Biology should graduate without a basic understanding of physical oceanography.
3. Marine biology also requires a basic understanding of biology. Many students in the minor will take a biology series as part of their major (e.g. Biology, Oceanography, SAFS, POE), but at least one course is required for others in the minor as well.
4. All natural science students need to possess the skills to collect, collate, analyze, and interpret data. This is no different in Marine Biology. Therefore, all Marine Biology students should be required to take a Biometry course.
5. Marine Biology can not only be taught in the classroom. Therefore, all Marine Biology students should be given the opportunity to conduct field work. This requirement should at the very least be met by field trips nested within courses, but might also be fulfilled by an independent project.
6. Because each unit offers a unique set of courses aimed at the student with Marine Biology interests, all students fulfilling the minor should be required to sample across all three units.

Marine Biology Minor Proposal

Coordinating Body: The joint coordinating committee will be comprised of one faculty member and one academic advisor from each unit (Oceanography, SAFS, Biology). The advisors subgroup will handle day-to-day activities within the minor and seek the advice of the faculty for questions related to coursework, substitutions, transfer credits, etc. Faculty will be expected to stay on the committee for a minimum two-year commitment. In no year shall all three faculty members of the committee be new to the committee.

Administration: SAFS will administer the program for the first three years, after which the discussion will be opened whether to move the administrative functions to other units on a rotation. UW administration will be contacted for advice regarding coordination between minor administration and UW administration.

Integrative Experience: The minor shall have two integrating experiences. This mandatory experience will be aimed at integrating the educational experiences of the students and creating a cohort of marine biology students from different majors. This will take the form of the Bevan Series and its associated

course, in which students from varying disciplines meet and interact with researchers at the cutting edge of their respective fields. Minor students will be required to take either the Bevan Series course once, preferably in their sophomore or junior year or to participate in experiential fieldwork (see next paragraph). In future years, a seminar/discussion course focused more completely on Marine Biology may be added to the curriculum, forming a third integrating option.

The alternate integrative experience will be experimental and field-based. This opportunity is optional for SAFS and Oceanography students who already have a capstone experience, but will be strongly suggested for students who have not participated in experiential learning (e.g. many Biology or POE students). Marine Biology capstone experiences will be made available through existing coursework (e.g Marine Biology 351, selected courses at Friday Harbor Labs) and will focus on integrating the respective views of SAFS, Oceanography and Biology within a comprehensive research framework for individual students. That is, unlike the Bevan Series course, which focuses on student integration and cohort building, the capstone focuses on research integration for individual students. Integrative capstone experiences will be approved on a case-by-case basis, by the joint coordinating committee in association with student services staff, to insure that the proposed research truly reaches across disciplines.

Projected Enrollment

Based on student polls taken during lab sections of our Introduction to Marine Biology course (SAFS/Biol/Ocean250) and on current enrollment statistics for the majority of the ‘environmental-centric’ majors, we estimate that the minor will enroll ~175 students at steady state. Data for the table can be provided upon request.

Current Enrollments and MB Minor Projections:

Unit	# students	likely MB	comments
SAFS	125	38	assuming 30% multiplier
Ocean	82	7	assuming 20% multiplier for Biol. Ocean majors
Biology	980	99	5-20% multiplier depending on degree track
PoE	144	14	assuming 10%
CFR	187	9	assuming 5%
Earth and Space Sciences	111	6	assuming 5%
TOTAL	1626	173	

Structure for the Minor

The minor includes a minimum of 35 credits of study emphasizing marine biological concepts and integration of marine biology with traditional core ocean disciplines (Biology, Fisheries, Oceanography). There are four required introductory courses (18 credits) and one required integrative course (3 credits). The remaining 14 credits can be obtained from the pool of electives.

Of the total course credits, no more than 49% of the credits may come from a student’s home department. Of the electives, students must take courses from all three of the sponsoring academic units (Biology, SAFS, Oceanography). Students not planning to major in the natural sciences are strongly encouraged to complete basic biology courses, which serve as prerequisites to many of the electives. Although students will not specifically be required to conduct research, opportunities for field work within courses, as well

as summer internships and other marine biology research opportunities will be made available and strongly advised for students who are not completing a capstone project within their major.

Social science or policy courses are not required, although a list of courses fulfilling University-wide requirements is provided. No more than one social science course shall count toward the minor.

REQUIRED COURSES	NAME	OFFERED	CREDITS
<i>Introductory:</i>			
FISH /OCEAN/BIOL 250	Introduction to Marine Biology	Fall	5*
OCEAN 210	Ocean Circulation	Summer, Winter	3
BIOL 180 (161 acceptable)	Intro to Biology	Fall, Winter, Spring, Summer	5
Q SCI 381	Introduction to Probability & Statistics	Fall, Winter, Spring	5**
<i>Integrative:</i>			
FISH/BIOL/ENVIR 478	Topics in Sustainable Fisheries	Winter	3
FISH 492***	FHL Apprenticeships	FHL – Fall, Spring	9-15

* available to non-minors for 3 credits w/o lab section

** prereq of MATH 120, a minimum score of 2 on advanced placement test, or a minimum score of 67% on MATHPC placement test

*** approved on an individual basis, if the particular apprenticeship meets requirements as an integrated marine biology offering. Independent research credit, structured as a particular field project, would also qualify. Only 3 of the 9-15 credits would qualify, such that a slate of electives would still be required.

The list of elective courses is designed to be expansive and allow majors to select courses that will provide in depth content in marine biology while also meeting requirements within their selected major. At the moment, these courses are arranged by academic unit, so that all units can easily see which courses are being considered. However, when presented to students, the courses will most probably be organized into broad categories (e.g., ecology, physiology, conservation, etc.).

SUGGESTED COURSES	NAME	OFFERED	CREDITS
OCEAN 220	Introduction to Field Oceanography	Spring	3/5
OCEAN 430	Biological Oceanography	Winter	4
OCEAN 431	Advanced Biological Oceanography	Summer, Winter	3
OCEAN 442	Oceanography of Puget Sound	Fall, Winter, Spring	3
OCEAN 454	Hydrothermal Vents	Spring	3
OCEAN 499	Dynamics of Ocean Life	Winter	3

SUGGESTED COURSES	NAME	OFFERED	CREDITS
FISH 310	Biology of Shellfishes	Spring	5
FISH /BIOL 311	Biology of Fishes	Winter	3/5
FISH 312	Fisheries Ecology	Spring	3/5
FISH 323	Conservation and Management	Fall	5
FISH 324	Aquatic Physiology	Winter	3/5
FISH/SMA 350	Coastal Marine Ecology	Winter	3
FISH 420	Ecology of Marine Fishes	Spring	4
FISH 475	Marine Mammalogy	Spring	5

SUGGESTED COURSES	NAME	OFFERED	CREDITS
BIOL/FISH 311	Biology of Fishes	Winter	3/5
BIOL 330	Natural History of Marine Invertebrates	Summer	5
BIOL 430***	Marine Zoology	FHL - Spring	8
BIOL 432	Marine Invertebrate Zoology	FHL - Summer	9
BIOL 433	Marine Ecology	Spring	5
BIOL 434	Invertebrate Zoology	Winter	5
BIOL 445***	Marine Botany	FHL - Spring	8
BIOL 446	Biology to Algae	Spring	5
BIOL 448	Marine Algal Ecology	Winter	3
BIOL/ESS 451	Invertebrate Paleontology	Winter	5
BIOL 539*	Marine Algae	FHL - Summer	9
BIOL/FISH/ENVIR 478	Topics in Sustainable Fisheries	Winter	3

* with permission of instructor

*** taken concurrently at FHL

In addition to the natural science courses, students may take one (1) of these courses as part of the minor.

SUGGESTED COURSES	NAME	OFFERED	CREDITS
SMA/ENVIR/SIS 103	Society and the Oceans		5
SOC/ESRM/ENVIR 379	Environmental Sociology		5
ECON 435*	Natural Resource Economics	Spring	5
SMA/ENVIR 476	Introduction to Envir. Law and Process		3
SMA/ENVIR/FISH 480	Marine Resource Conservation and Management	Winter	3
SMA 485	Pacific Recreation and Tourism Issues		3

* ECON 300 is a prerequisite

Marine Biology Minor (MARINE-20070515)

The Marine Biology minor - sponsored jointly by the College of Ocean and Fisheries Science and the College of Arts and Sciences – is designed to immerse students in the study of marine organisms and ecosystems, starting in the freshman year. Because the experience of marine sciences cannot be taught entirely within the classroom, the minor is structured to provide ample opportunity for fieldwork and research within the coursework.

Minor Requirements

35 credits, as follows:

1. *Introductory Courses* (18 credits): FISH/OCEAN/BIOL 250, OCEAN 210, BIOL 161 or BIOL 180, Q SCI 381.
2. *Integrative Experience* (3 credits): FISH/BIOL/ENVIR 478 (3 credits of FISH 492 may be approved on an individual basis, if the particular apprenticeship satisfies the integrated marine biology requirement).
3. *Electives* (14 credits): Selected from an approved list available from a program advisor, additional courses may be approved by program advisor. (Minimum of one elective course must be taken from each Biology, School of Aquatic and Fisheries Sciences, and Oceanography).
4. Up to 17 credits may overlap with credits applied to student's major and up to 5 credits may overlap with credits applied to another minor.
5. Minimum 15 credits in upper-division courses.
6. Minimum 2.0 cum GPA for courses presented for the minor.

Approved List of Electives:

BIOL/FISH 311	Biology of Fishes	3/5
BIOL 330	Natural History of Marine Invertebrates	5
BIOL 430***	Marine Zoology	8
BIOL 432	Marine Invertebrate Zoology	9
BIOL 433	Marine Ecology	5
BIOL 434	Invertebrate Zoology	5
BIOL 445***	Marine Botany	8
BIOL 446	Biology to Algae	5
BIOL 448	Marine Algal Ecology	3
BIOL/ESS 451	Invertebrate Paleontology	5
BIOL/FISH/ENVIR 478	Topics in Sustainable Fisheries	3
FISH 310	Biology of Shellfishes	5
FISH/BIOL 311	Biology of Fishes	3/5
FISH 312	Fisheries Ecology	3/5
FISH 323	Conservation and Management	5
FISH 324	Aquatic Physiology	3/5
FISH/SMA 350	Coastal Marine Ecology	3
FISH 420	Ecology of Marine Fishes	4
FISH 475	Marine Mammalogy	5
OCEAN 220	Introduction to Field Oceanography	3/5
OCEAN 430	Biological Oceanography	4
OCEAN 431	Advanced Biological Oceanography	3
OCEAN 442	Oceanography of Puget Sound	3
OCEAN 454	Hydrothermal Vents	3
OCEAN 499	Dynamics of Ocean Life	3

One of the following policy courses may be applied towards the elective requirements:

SMA/ SIS 103	Society and the Oceans	5
SOC/ESRM/ENVIR 379	Environmental Sociology	5
ECON 435	Natural Resource Economics	5
SMA/ENVIR 476	Introduction to Envir. Law and Process	3
SMA/ENVIR/FISH 480	Marine Resources Conservation & Mgmt	3
SMA 485	Pacific Recreation and Tourism Issues	3

*** taken concurrently at Friday Harbor Laboratory (FHL)

**INTERDISCIPLINARY MINOR IN MARINE BIOLOGY (MARINE-2007-0515)
Tri-Campus Review Comments:**

Comment by Joachim Voss made 10/8/2007 2:39:06 PM

This minor would be a great addition to the current program and seems to cover a much needed area that UW is not offering. I cannot find anything to criticize on it, the combination of in-classroom teaching and field experiences seems ideal and if I could I would take it.

Comment by Kris Moe made 10/8/2007 2:54:54 PM

I think this is an outstanding effort, and I hope that the University puts its whole weight behind it.

Kris. S. Moe, M.D.

Chief, Division of Facial Plastic Surgery

University of Washington

Comment by Richard Strathmann made 10/8/2007 6:27:02 PM

I agree with the stated rationale. The marine environment differs from terrestrial and freshwater environments in ways that affect research questions and the means of answering them. Students will benefit from field experience and from experience in the several departments/schools involved in the marine biology minor.

Richard Strathmann

Friday Harbor Labs

Comment by Amanda Swarr made 10/8/2007 6:40:02 PM

I think students would be very interested in this initiative; it sounds like an excellent idea.

Comment by Chandan Reddy made 10/9/2007 9:34:45 AM

The proposal for this major and minor is cogent and clearly elaborated, showing just how deeply the proposers of this major have digested and designed the intellectual basis for this major. I hope the University will offer its resources to realize this project with its clearly strong intellectual fulcrum. It appears students would leave the University as better scholars and scientists of the "marine world" with this major and minor in place than they do currently. And that reason alone suggests the need for this interdisciplinary track.

FCAS Response:

FCAS in its meeting of 2 November received the subcommittee SCAP's review of the Tri-Campus postings responding to the Marine Biology minor under consideration, noted that all six comments were supportive to enthusiastic, and concluded that the Minor had successfully passed TriCampus review and can be forwarded to FCTCP.

--George Dillon, Chair of FCAS

UNIVERSITY CAMPUSES UNDERGRADUATE PROGRAM REVIEW PROCEDURES**

CHECKLIST

Title of Proposal: Interdisciplinary Minor in Marine Biology (MARINE-20070515)

Proposed by (unit name): SAFS, Department. of Biology

Originating Campus:

UW, Seattle

UW, Bothell

UW, Tacoma

I. Phase I. Developed Proposal Review (to be completed by Originating Campus' Academic Program Review body)

A. Review Completed by: (list name of program review body)

Chaired by:

10/05/07 Date proposal received by originating campus's review body

10/05/07 Date proposal sent to University Registrar

10/08/07 Date proposal posted & email sent to standard notification list

11/02/07 Date of originating campus's curriculum body approval

(Note: this date must be 15 business days or more following date of posting)

B. 5 Number of comments received. Attach the comments and a summary of the

consideration and responses thereof : (1-2 paragraphs)

II. Phase II. Final Proposal Review (to be completed by FCTCP)

A. Review Completed by:

n/a FCTCP subcommittee

11/26/07 FCTCP full council

Chaired by: Janet Primomo

11/9/07 Date request for review received from University Registrar

11/28/07 Date of FCTCP report

B. Review (attached)

YES NO

Was notice of proposal posted on UW Website for 15 business days?

___ Was notice of proposal sent to standard mailing list 15 business days in advance of academic program review?

___ Were comments received by academic program review body?

___ Was response to comments appropriate? (explain, if necessary)

___ Was final proposal reviewed by FCTCP within 14 days of receipt?

___ Was there adherence to the University Campuses Undergraduate Program Review Process? (explain, if necessary)

C. Recommendation

Forward for final approval

___ Forward to Provost because of University issues (Explain)

___ Return to campus council because of insufficient review (Explain).

**Endorsed by Faculty Senate Executive Committee, 1/10/05, modified 1/31/06; These procedures apply to new undergraduate degrees, majors, minors (and certificates) and substantive changes to same

At its meeting November 26, 2007, the full FCTCP completed the Phase II review of MARINE-20070515 (Interdisciplinary Minor in Marine Biology. The Council noted that all procedures were followed; the proposal generated comments that were positive.

The FCTCP is pleased to have the Registrar forward the final proposal to the President for final action and transmit the information to the Dean. Thank you.
Janet Primomo, Chair, FCTCP