AUTHORIZATION TO PLAN AN ACADEMIC PROGRAM
University of Hawaii at Hilo

1. School/College and Department/Unit
   Marine Science Department, Natural Sciences Division, College of Arts and Sciences

2. Chair/Convener of Planning Committee
   James Beets, Marta deMaintenon, Tracy Wiegner, Misaki Takabayashi

3. Program Category: x New ___Modified ___ Interdisciplinary

4. Level of Program or Major (Doctoral, Masters, Undergraduate, Certificate, Noncredit, etc.)
   Undergraduate

5. Degree or Certificate Proposed
   Bachelor of Science (B.S.)

6. Planning
   a. Planning period  (If significant work has not been done during a one-year period, approval may be withdrawn)
      We have already spent 6 months planning for this degree. No further planning time necessary.
   b. Activities to be undertaken during the planning phase
      We have:
      1. Taken student surveys to assess the need for B.S. in Marine Science
      2. Researched what other institutions offer as B.S. in Marine Science
      3. Formulated the lists of required courses as well as electives
      4. Assessed whether we have the potential to offer this B.S. within our resources
         We still need to:
         1. Rearrange department resources to ensure that this program can be sustained
         2. Develop new courses and modifications of existing courses included in the new B.S.
   c. Proposed Date of Implementation
      Fall 2008
   d. Workload/budget implications during planning period
      Most of the planning has occurred already with workload increases on faculty, but without increases in budget

7. Program Description (Objectives and Relationship to Mission)

   Description
   Marine Science will offer two well-rounded and multi-disciplinary degree programs, a B.A. and a B.S., both of which have been carefully designed to take full advantage of the unique variety of marine environments available for study around the island of Hawai‘i. In both B.A. and B.S. degrees, introductory lecture and laboratory courses in
general oceanography and marine biology are followed by intermediate level courses in marine ecology, marine sampling and analytical methods, and statistical applications in marine science. The B.S. degree provides a more comprehensive background in the sciences than the B.A. degree, including upper level required courses in the focal areas of Marine Biology, Marine Ecology and Oceanography. The sole capstone course for the B.S. degree is the Senior Thesis, which allows a student to plan and carry out a one-year marine research project of their choosing, mentored by a faculty member in the department.

Mission Statement
The mission of the undergraduate degree program in marine science is to provide students with a comprehensive understanding of the world’s oceans, and an appreciation of the importance of marine ecosystems to the global environment and human life, through a combination of hands-on laboratory and field experience, inquiry-based instruction and direct interactive learning. This is supported by a broad background in the marine sciences, including basic knowledge of the natural science disciplines of biology, chemistry, physics, geology, and mathematics.

Objectives

Content Goals
Provide students with a solid background in:
1. The primary sciences and mathematics, including proficiency in biology, chemistry, physics, calculus, computer applications related to the natural sciences, and laboratory techniques;
2. Marine science, including proficiency in marine biology, introductory oceanography, marine ecology, chemical oceanography and physical oceanography; and
3. Advanced multidisciplinary undergraduate training in their choice of a variety of focal areas, including but not limited to geography, geology, biology, fisheries and aquaculture.

General Goals
Provide students with knowledge of and experience in:
1. The scientific method and critical thinking, including the ability to design and carry out an inquiry-based research or internship project, analyze primary scientific literature, write a scientific proposal, and write a research paper or compile a portfolio; and
2. Scientific speech and discussion, including the ability to formally present a science project and discuss scientific issues

Technical Goals
Provide students with an understanding of and proficiency in Laboratory safety; Oceanographic and marine biological laboratory methods and field techniques; The use and application of biostatistical and microcomputer techniques; and Experimental design, data analysis, and interpretation of results, and particularly in the use and application of marine monitoring techniques.
8. Program Justification (Needs and Rationale)

The new B.S. degree in Marine Science was proposed because of the increasing number of students in the B.A. Marine Science Degree program who wish to continue their education toward a graduate degree. This may be inspired in part because the university itself is changing to provide graduate programs, for instance Tropical Conservation Biology and Environmental Sciences, in which some of our students have enrolled.

Marine Sciences at the University of Hawaii at Hilo has always been a strong draw for students, and the university is well placed to offer a broad-based program in the Marine Sciences. To present, we have offered a B.A. degree, which has served well for a wide diversity of students interested primarily in the applied aspects of Marine Science. Over the years, we have increased the rigor of the degree program, in order to help the students who want to undertake graduate studies. In doing so, we have tried to serve many needs with one degree program. It has been increasingly obvious that a one-degree-fits-all program, especially with one as broad-based as Marine Science, does not address all the need of the students. So, with this plan we are splitting the current Marine Science Degree program into a new BS degree and a revised BA degree, so that both these degree programs can be better tailored to the students they need to serve. The new BS degree, similar to other programs in the Natural Sciences, is tailored to include all of the courses (e.g., the full year each of Chemistry, Physics, Calculus, as well as Biology, Statistics, Organic Chemistry, plus the basic Oceanography courses and Methodological courses) needed by a student approaching graduate studies in the Marine Sciences, either here, at UH Manoa, or wherever they choose to go. In proposing this degree, we can then restructure our existing BA degree (included as part of this package) to better serve the broader base of students, including local students and Pacific Islanders, as the university’s mission requires.

9. Description of resources required and status or sources

a. New courses for the B.S. degree – No new courses are proposed for the BS degree.

b. New facilities and equipment needed (lab or special equipment, estimate of journals and books needed). -No new facilities, equipment or journals will be required over what is currently available for the existing courses.

C. Additional faculty or other personnel - All courses for the B.S. degree are currently being taught by UH Hilo faculty or (in the case of the new course) will use existing expertise in the Marine Science Department. No new faculty or other personnel will be required to meet the needs of this degree program.

D. Total cost of new resources - No additional funds will be needed for this degree program unless there is a dramatic increase in student enrollment.

a. Faculty

All courses for the B.S. degree are currently being taught by UH Hilo faculty or (in
the case of the new course) will use existing expertise in the Marine Science Department. No new faculty or other personnel will be required to meet the needs of this degree program.

b. Library resources (including an evaluation of current resources and an estimate of the cost of additional resources required)

No new library resources are needed.

c. Physical resources (space, equipment, etc.)

No new facilities or equipment will be required over what is currently available for the existing courses.

d. Additional resources required (staff, graduate assistantships, etc.)

None

e. Estimate of additional position counts and budget implementation for first five years of the program

N/A

10. Five-Year Business Plan. Please provide a five-year projected budget for the program that includes:

a. Projected enrollment and estimated tuition revenue: We expect that a few new students will join the Marine Science Department once the B.S. degree is offered. We hope that the creation of this degree will increase retention of students in the major, as we have lost students to Biology because they offer a B.S. degree and to UH Manoa. We anticipate that some students who are presently working towards a B.A. degree will switch tracks once the B.S. degree is offered.

b. Additional sources of revenue: There may be additional revenue from tuition from the new students the Marine Science Department will attract because the B.S. degree.

c. Costs associated with the resources noted above: No new resources are needed, so there are no new costs.

11. Budget

a. Does the current or proposed budget include funds or a request for funds for the proposed program? Please provide details.

No new funds are required for this proposed degree.

b. Given a “flat budget” situation, how will the proposed program be funded?

No new funds are required for this proposed degree, so a flat budget situation should not interfere with offering this degree to the students.
12. Impact on current courses or programs.

Marine Science Department will continue to offer the B.A. degree in its modified form. While some students currently enrolled in B.A. in Marine Science will transfer to the B.S. degree, the combination of the two bachelor degrees will expand the options and fill in currently vacant niches in our undergraduate education (see Program Justification above). Marine Science Department will be more self-sufficient as we will be teaching more of the required courses in-house, rather than relying on other departments as part of the new program plan.

13. If this program is multidisciplinary, provide evidence of commitment for support from the colleges, departments, programs, and/or individuals expected to participate.

N/A

Reviewed by:

Department Chair/Program Director/Division Chairs:
Comments/Recommendations:
Department Chair, Marine Science – Jim Beets
Division Chair, Natural Sciences – Leon Hallacher

Print Name       Signature       Date

College/School Dean(s):
Comments/Recommendations:

Print Name       Signature       Date

Graduate Council (graduate programs only):
Comments/Recommendations:

Print Name       Signature       Date

Council of Chief Academic Officers (Systemwide Consultation):
Comments/Recommendations:

Print Name       Signature       Date
Vice Chancellor for Academic Affairs:
Comments and Recommendations:

________________________________________________________________
Print Name      Signature     Date

Chancellor: ___ Approved   ___ Disapproved

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Print Name      Signature     Date