UNIVERSITY OF HAWAII COMMUNITY COLLEGES

PROPOSAL TO INITIATE, MODIFY OR DELETE A COURSE

1. TYPE OF ACTION
   A. Addition  □ Regular □ Experimental □ Other ____________________ (specify)
   B. Deletion □ in credits □ in title □ in number or alpha □ in prerequisites □ Other ____________________ (specify)
   C. Modification □ in credits □ in title □ in number or alpha □ in prerequisites □ Other ____________________ (specify)

2. NEW ALPHA, NUMBER AND TITLE BIOLOGY 200L Coral Reef Laboratory
   4. OLD ALPHA, NUMBER AND TITLE _______________ and Field Studies

   6. NEW CATALOG DESCRIPTION

   see attached course outline

   7. PREREQUISITES
      BIOLOGY 200 (or concurrent)
      MATH 27 (or equiv. prep.)
      or consent of instructor

   8. STUDENT CONTACT HOURS PER WEEK
      Lecture ______ Lecture/Lab ______ Lab ______
      Other (specify) ______

   9. PROPOSED DATE OF FIRST OFFERING
      Fall 1998

10. THIS COURSE □ IS REQUIRED  □ IS AN ELECTIVE FOR THE WCC Marine Option PROGRAM/CORE
       (Please specify) (Circle approp.)
       □ CAN FULFILL Natural Science Laboratory Core REQUIREMENT
       (Please specify)

11. THIS COURSE □ INCREASES □ DECREASES □ MAKES NO CHANGE IN NUMBER OF CREDITS REQUIRED FOR THE PROGRAM/CORE

12. SIMILAR COURSES OFFERED ELSE WHERE: none
       College(s): _______________
       Alpha, Number, Title: _______________

13. THIS COURSE IS
       □ ALREADY ARTICULATED with _______________________
       □ APPROPRIATE FOR ARTICULATION with Nat. Sci. Core
       □ NOT YET APPROPRIATE FOR ARTICULATION

       (Provide details of existing or desired articulation (date, college(s), purposes, pre-major or major, etc.)

       This class, when taken in combination with BIOL 200, is appropriate for satisfying natural science core requirements for a lab class on all

14. REASON FOR INITIATING, MODIFYING OR DELETING COURSE OR OTHER PERTINENT COMMENT:campuses.

       Optional companion laboratory course for proposed BIOLOGY 200 course. Will contribute to development of WCC science curriculum in remote
       sensing for environmental monitoring.

REQUESTED BY: ___________________________, ___________________________, ___________________________, (Signature)
   Department Chairperson
   Date

APPROVED BY: ___________________________, ___________________________, ___________________________, (Signature)
   Curriculum Committee
   Date

   ___________________________, ___________________________, ___________________________, (Signature)
   Faculty Senate
   Date

   ___________________________, ___________________________, ___________________________, (Signature)
   Dean of Instruction
   Date

   ___________________________, ___________________________, ___________________________, (Signature)
   Provost
   Date

   ___________________________, ___________________________, ___________________________, (Signature)
   Change recorded by Catalog Preparer
   Date

CCCM #6100
(Amended for WCC use Sept. 1991)
## LEVELS OF REVIEW OF COURSE PROPOSALS AT WCC

<table>
<thead>
<tr>
<th>Signatures</th>
<th>Dates</th>
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<tr>
<td><strong>1. Subject Area</strong> (one or more instructors in the area)</td>
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<tr>
<td>Joseph E. Ciotti</td>
<td>12-8-97</td>
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<tr>
<td>Clyde A. Notley</td>
<td>12-8-97</td>
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<tr>
<td>Jacqueline Malo</td>
<td>12-8-97</td>
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<tr>
<td>Assistant Dean of Instruction</td>
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<td>1/26/98</td>
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<td>Curriculum Committee Chairperson</td>
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WCC FORM FOR NEW COURSE PROPOSALS

Course BIOLOGY 200L Submitted by Dave Krupp Date 12/4/97

1. How is this course related to the educational needs and goals of the College/Department/Community as reflected in the EDP?
   1. Companion lab course to BIOL 200.
   2. Promotes quantitative analysis and critical thinking skills.
   3. Emphasizes the Hawaiian environment.
   4. Helps achieve departmental goal to establish a curriculum in remote sensing.

2. Provide details of any additional staff, equipment, facilities, library/media material, faculty preparation and other financial support that would be required to implement this course. (Include an estimate of the actual cost of supplies and equipment.) What has been done to provide for these additional costs for the proposed date of offering? Who will teach the course?

   This lab will rely on existing equipment and supplies budgets. The remote sensing/GPS activities will be supported by extramural funds already approved (NASA grant). Dave Krupp, who will teach this class, will rotate this class with other classes that fulfill his normal instructional load.

3. Is a similar course taught elsewhere in the UH system? no If yes, provide details of how this course differs from existing similar courses.

4. Is this course experimental and/or unique to Windward Community College? yes If yes, provide rationale and details of its impact on the College curriculum. This lab course will complement a proposed lecture class on coral reefs (BIOL 200). It will also contribute to planned curriculum development in remote sensing for environmental monitoring.

5. Is a similar course taught on the upper division level by a 4-year UH college? no If yes, explain why this course is appropriate at the lower division or how it differs from its upper division counterpart.

6. Please attach a complete course outline. Your course outline should address all the items listed in the Guidelines for Course Outlines.

7. If this course is numbered 100 or above or appropriate for transfer to a 4-year college, complete and attach WCC Form for Transfer Courses (blue). (See attached criteria for transfer courses.)

WCC 9/91
WCC FORM FOR TRANSFER COURSES
(To be completed for articulation with any 4-year UH campus)

Course BIOLOGY 200L Submitted by Dave Krupp Date 12/4/97

1. List the counterpart to this course on any 4-year UH campus. Describe the relationship between the course and any related baccalaureate program area.

This is a unique laboratory class not taught on any 4-year UH campus. It may be appropriate for satisfying Marine Option Program requirements at UH campuses with Marine Option Programs.

2. Is this course taught or accepted by major accredited colleges or universities? Give one or two examples.

none

3. Please attach a complete course outline, if you have not done so already. Your course outline should address all the items listed in the Guidelines for Course Outlines.
WINDWARD COMMUNITY COLLEGE

OUTLINE OF COURSE OBJECTIVES

COURSE NAME: Coral Reef Laboratory and Field Studies
COURSE ALPHA: BIOL 200L
CREDIT HOURS: 02

CATALOG DESCRIPTION:

Laboratory and field studies of the biology, ecology and geology of stony corals and the reef structures they build; companion course to BIOL 200. (two 3 hr labs).

REQUIREMENTS COURSE SATISFIES:

Partially fulfills WCC’s AA degree Natural Science requirements. This class counts as a science laboratory course.

PREREQUISITES:

BIOL 200 (or concurrent) and MATH 27 (or equivalent preparation) or consent of instructor

RECOMMENDED SPECIAL PREPARATION: None

RECOMMENDED BASIC SKILL LEVELS:

Reading Level of Text (s): College Level
Ability to swim

ACTIVITIES REQUIRED AT SCHEDULED TIMES OTHER THAN CLASS TIME:

none

INSTRUCTOR: Dr. David Krupp
OFFICE: Hale 'Imiloa 104
TELEPHONE: 235-7316 (WCC office), 236-7437 (HIMB office)
EFFECTIVE DATE: Fall 1998
COURSE GOALS

Students will experience and understand current laboratory and field methodologies used in the study of corals and coral reefs.

COURSE OBJECTIVES

Upon completion of this course a student should be able to:

1) make observations and ask questions that result in scientific solutions;
2) collect, reduce, analyze (using statistical methods), interpret and present biological data;
3) discuss corals as members of Phylum Cnidaria and recognize/distinguish the higher taxa forming this phylum;
4) describe the details of the soft tissue and skeletal features used in coral taxonomy;
5) recognize and identify, using the scientific names, of the major Hawaiian representatives of stony corals, other invertebrates, fishes and seaweeds;
6) demonstrate competency in the use of the standard tools of the biological scientist (e.g., such as microscopes, electronic scales, spectrophotometers, other measuring tools, and computers);
7) demonstrate competency in the use of specialized tools frequently used in the study of corals and coral reefs (e.g., oxygen meters, salinometers, quantum meters, transects, transits, quadrats, underwater cameras, and global positioning systems);
8) demonstrate competency in the current methods involved in coral reef studies (e.g., respirometry, pigment analyses, water quality assessments, larval biology, growth, reef biota surveys and resource assessments, reef geomorphology, remote sensing from satellite and aircraft images, and sediment analyses); and
9) communicate scientific concepts through written reports in a clear, concise manner.

EVALUATION OF OBJECTIVE ACHIEVEMENT

LABORATORY/FIELD NOTEBOOK. The student will maintain a laboratory/field notebook to record all notes, observations, and information gathered before and during laboratory activities. This notebook must be brought to every laboratory period. FAILURE TO HAVE THE LAB NOTEBOOK DURING THE LAB PERIOD WILL RESULT IN A 10 POINT REDUCTION IN THE STUDENT'S TOTAL POINTS FOR EACH OCCURRENCE. This notebook will be collected and graded twice during the semester (25 points each collection). The type of notebook and the kind of information required will be explained during the introductory lab session.

LABORATORY ASSIGNMENTS. The student will complete a total of 14 written laboratory assignments (20 points each). Each assignment must be completed and turned in no later than the first laboratory meeting after the assignment was given (280 points total).

SEMESTER PROJECT. During the course of the semester, students will participate in a group research project (may involve several groups or the whole class as a single group). The students' involvement in the project will be documented by individually-produced self-assessment reports (50 points) and a group-generated final report (50 points for each student's participation and contribution).
SPECIES IDENTIFICATION QUIZZES. The student will complete four species identification quizzes (20 points each; 80 points total).

LABORATORY ATTENDANCE. Regular attendance is expected. Because laboratories involve considerable set-up/take-down time and supervision, students will NOT be able to make up missed laboratory activities. A student missing a scheduled laboratory activity because of an illness or legitimate emergency may be given an alternative activity to make up lost points. In such a circumstance, the student is still responsible for the information presented during the missed laboratory session. Regardless of the reason, a student missing more than three scheduled laboratory sessions WILL NOT RECEIVE CREDIT FOR THE COURSE.

METHOD OF GRADING

The assignment of points will be according to the following protocol:

<table>
<thead>
<tr>
<th>Species Identification Quizzes</th>
<th>80 points</th>
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<tbody>
<tr>
<td>Laboratory/Field Notebook</td>
<td>50 points</td>
</tr>
<tr>
<td>Laboratory/Field Reports</td>
<td>280 points</td>
</tr>
<tr>
<td>Project Self-Assessment</td>
<td>50 points</td>
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<tr>
<td>Group Project</td>
<td>50 points</td>
</tr>
<tr>
<td>TOTAL</td>
<td>510 points</td>
</tr>
</tbody>
</table>

Letter grades will be assigned as follows:

A --- 90% or above in total points and missing no more than 9 hours of laboratory activities;
B --- 80-89.9% of total points and missing no more than 9 hours of laboratory activities;
C --- 65-79.9% of total points and missing no more than 9 hours of laboratory activities;
D --- 55-64.9% of total points and missing no more than 9 hours of laboratory activities;
F --- Below 55% of total points, or missing more than 9 hours of laboratory activities, or informal or incomplete official withdrawal from course;
I --- Incomplete; given at the INSTRUCTOR'S OPTION when student is unable to complete a small part of the course because of circumstances beyond his or her control. It is the STUDENT'S responsibility to make up incomplete work. Failure to satisfactorily make up incomplete work within the appropriate time period will result in a grade change for "I" to the contingency grade identified by the instructor (see catalog);
CR -- 65% or above in total points and missing no more than 9 hours of laboratory activities; the student must indicate the intent to take the course as CR/NC in writing by the end of the 10th week of classes (see catalog).
NC -- Below 65% of total points or missing more than 9 hours of laboratory activities; for BIOL 200L, this grade only available under the CR/NC option (see above and see catalog);
N --- NOT GIVEN BY THIS INSTRUCTOR EXCEPT UNDER EXTREMELY RARE CIRCUMSTANCES (e.g., documented serious illness or emergency that prevents the student from officially withdrawing from the course); never used as an alternative for an "F" grade;
W --- Official withdrawal from the course after the third week and prior to the end of the 10th week of classes (see catalog).

Waiver of minimum level of achievement will be given only in unique situations at the instructor's discretion.

Students involved in academic dishonesty will receive an "F" grade for the course.
STUDENT RESPONSIBILITIES

Students should carefully review the attached sheet detailing inherently dangerous activities of this course and sign the appropriate U.H. Assumption of Risk and Release and Medical Consent forms.

Students are expected to participate in all laboratory activities and complete all course assignments on time.

Students are expected to be prepared in advance when they arrive to class. Being prepared includes the following: having already read text materials (e.g., textbook readings and handouts) assigned for that day's activities, bringing required work materials (e.g., lab notebook, textbook, handouts, writing supplies, etc.), and having completed any assigned pre-lab tasks.

Any changes in the course schedule, such as examination dates, deadlines, etc., will be announced ahead of time in class. It is the student's responsibility to be informed of these changes.

It is the student's responsibility to be informed about deadlines critical to making registration changes (e.g., last day of erase period and last day for making an official withdrawal.

The student should understand that BIOL 200L is a difficult course for students intending to major in one of the biological sciences. Thus BIOL 200L requires much time and serious dedication. If the student does not have a strong background or interest in science, the student does not belong in this lab course.

TEXTBOOK AND OTHER ASSIGNED INSTRUCTIONAL MATERIALS

No textbook will be required. Instead the students will be provided with handouts detailing laboratory activities and requirements.

OTHER INFORMATION

Important Dates:

- Last day to add or drop a class .........................
- Last day of erase period ..................................
- Last day for official withdrawal......................

Instructor's Office Hours (or by appointment):
<table>
<thead>
<tr>
<th>WEEK</th>
<th>LECTURE TOPIC</th>
</tr>
</thead>
</table>
| 1    | Course Introduction  
Collecting, Summarizing, Interpreting, and Presenting Data |
| 2    | Animal Body Plans  
Using Dichotomous Keys |
| 3    | Phylum Cnidaria Characteristics  
Characteristics of Stony Corals |
| 4    | Identification of Common Hawaiian Scleractinian Corals |
| 5    | Coral Feeding Studies  
Photosynthesis and Respiration in Reef-Building Corals |
| 6    | Identification of Common Hawaiian Marine Plants |
| 7    | Identification of Common Hawaiian Marine Invertebrates |
| 8    | Identification of Common Hawaiian Marine Fishes |
| 9    | Benthic Surveys: Line Transect and Quadrat Methods |
| 10   | Benthic Surveys: Geomorphology, Profiling and Mapping |
| 11   | Fish Surveys |
| 12   | Global Positioning System (GPS) Analysis |
| 13   | Remote Sensing: Basic Skills |
| 14   | Remote Sensing: Advanced Skills |
| 15   | Putting it All Together: The Kaneohe Bay Barrier Reef |
| 16   | Putting it All Together: The Kaneohe Bay Barrier Reef |
MATH ACTIVITIES TO BE USED IN BIOL 200L

General Computational Activities/Functions/Concepts
Percentages and Proportions
Probability
Derived Variables (e.g., density)
Data Transformations
Exponents
Scientific Notation
Square Roots
Summations
Logarithms
Using Formulae

Descriptive Statistics
Arithmetic Means
Standard Deviations (& Variances)
Linear Regression Coefficients & Correlation Coefficients

Statistical Hypothesis Testing
Wilcoxin Signed-Rank Test
Chi-Square Test
t-Test

Graphical Presentation/Interpretation of Data
Frequency Histograms
Other Vertical Bar Graphs
Dependent Variable-Independent Variable Relationships

Other Computational Activities (Sample Problem)

Given the following information, the student should be able to calculate the net production of oxygen (in mg) by a coral per mg chlorophyll over a 24 h period (assuming 12 h light and 12 h dark):

Absorption of light by an acetone extract of chlorophyll from the coral (or portion of it);
Volume of this acetone extract;
Formula that calculates concentration of chlorophyll (in ug/mL) from absorption values;
Oxygen concentration (in mg/L) of the water in the coral's incubation chamber at various measured times in the dark and in the light;
Water volume of the incubation chamber;
Displacement volume of the coral.