Honolulu Community College
General Education – DIVERSIFICATION DESIGNATION
Certification and Recertification
Application Form
Spring 2012

APPLICANT: G. Witteman

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COURSE ALPHA and NUMBER: BIOL 124

COURSE TITLE: ECOLOGY AND ENVIRONMENT

ESTIMATED NUMBER OF SECTIONS:
Fall: 0
Spring: 1

APPLICATION IS FOR:
□ New Course  □ Modified Course  X Existing Course  □ Re-designation
□ Certification  X Re-Certification. Date of last certification:

DIVERSIFICATION AREA DESIGNATION SOUGHT:
□ DA (Arts)  □ DP (Physical Sciences)
X DB (Biological Sciences)  □ DS (Social Sciences)
□ DH (Humanities)  □ DY (Laboratory)
□ DL (Literature and Language)

What percentage of the CONTENT of this course focuses on this diversification area?  100

What percentage of CLASS MEETINGS focuses on this diversification area?  100
1. **Hallmarks and SLOs.** Please explain how course-specific SLOs align with the diversification area’s hallmarks.

   BIOLOGY 124 course student learning outcomes and student competencies with diversification hallmarks (DB1-3) is shown here. Each course competency, objective or intended learning outcome in the list below fulfills one or more of the following diversification hallmarks.

   DB.1 uses the terminology of the biological sciences.
   
   Objective/competency/outcome: a through f (all). This course explores the interactions between man and environment from a biological perspective. Using correct terminology for specific biological and related scientific principles in the course for outcomes a-f below is obvious.

   DB.2 involves knowledge and theories relating to processes in the biological sciences;
   
   Objective/competency/outcome: a through f (all). As this course explores the interactions between man and environment from a biological perspective, all aspects of the course involve knowledge and theories relation to processes in the biological sciences.

   DB.3 demonstrates inquiry that is guided by observation/experiment and reasoning/mathematics.
   
   Objective/competency/outcome: a, d, e, f. As with all natural sciences, progress in the discipline of biology must rely exclusively on the scientific method. All course objectives and activities rely on this.

   **Student Learning Outcomes**

   a. Explain the process and philosophical basis of scientific inquiry.

   b. Describe the basic principles of ecology, including population ecology, community ecology, and ecosystem function.

   c. Describe the characteristics of the major biomes and ecosystems of the Earth.

   d. Describe the interrelationships between land, sea, the atmosphere and the living things that occupy these environments.

   e. Discuss the role that humans play in affecting the characteristics of the environment.

   f. Evaluate current environmental issues and problems including the solutions and management practices that have been used or offered to address these issues and problems.

   -------------- Note: 100% of the course content meets the three DB hallmarks. --------------

2. **Assessment strategies.** Explain assessment strategies you have used (or plan to use) to measure the degree to which students exit the course with the course-specific SLOs. If there are multiple sections of the course taught by different instructors, please discuss how assessment is (or will be) carried out across instructors.

   Lecture exams, active participation in class discussions, lecture/lab quizzes and take-home activities are used to assess the degree to which students and the class (as a whole) is able to meet course competencies. Each of the competencies and SLO's is demonstrated by all of the course activities.

   For example, “a” is demonstrated by exam, discussion, quiz, and in-class activities (as are all of the above a-f). This course uses a knowledge survey of general biological principles and course specific topics at the beginning of the semester, and then repeats groups of these questions in lecture exams after presentation of the topics in class. Specific course competencies and learning outcomes are measured and compared with previous semesters, and between current semester sections, to verify consistency in intended student
outcomes. Sections and topics have been identified and additional effort and learning opportunities presented for those with consistently low performance.

3. **Assessment of assessment.** How have you used (or plan to use) the assessment findings to modify or improve this course? If there are multiple sections of the course taught by different instructors, please discuss how review of assessment results is (or will be) carried out across instructors.

As with all biology, botany, zoology and agriculture courses at HonCC, instructors will be provided with material and asked to follow the coverage and emphasis of topics needed for this course to be equivalent to other campuses. Every effort will be made to insure that each topic is covered in appropriate detail (externally determined for consistency between all campuses). Every time the course is completed (after the semester) faculty will now be asked to assess their outcomes and compare to results to previous semesters. This assessment will be reviewed by permanent faculty and a summary will be put in the course/instructor materials for subsequent semesters if any changes and/or modifications to the course are necessary.
DIVERSIFICATION BOARD DECISION:

☑ Approved
Re-Certification Due: Spring 2018

☐ Not approved
If not approved, reasons for disapproval:

Diversification Board Chair Signature: [Signature]
Date: 01/02/13
BIOLOGY 124/124L: Ecology and Environment

Instructor: Dr. Greg Witteman
Class Times: MW. 1030-1100, Lab: Th 1130-1420
Classroom: 5-105
Office hours: M-F(9-10)

Office: 5-101B Phone: 847-9847
web: TBD
E-mail: witteman@hawaii.edu

COURSE DESCRIPTION: This is an introductory Biological Science course with no prerequisites. The Lecture portion of this course provides and introductory exploration of the biological and physical principles affecting human/environment interaction; impact of science, technology, value and perceptions on global society and ecology; projections and options about man's interaction with and modification of the environment. The laboratory portion of this course demonstrates lecture topics through experiments, field-trips and group discussion. This course articulates as Biology 124/124L at all University of Hawaii campuses offering this course. This course (124/124L) fulfills both DB and DY diversification requirements (Biology, Laboratory Science) at Honolulu CC.

Although the lecture portion of this course can be taken without the lab (124L) this is strongly discouraged. (the Biology 124L laboratory can NOT be taken with out previous or current enrollment in Biology 124).

Lecture Student Learning Outcomes: Upon completing the course the student will be able to:
a. Explain the scientific method and philosophical basis of scientific inquiry.
b. Describe the basic principles of ecology, including population ecology, community ecology, and ecosystem function.
c. Describe the characteristics of the major biomes and ecosystems of the Earth.
d. Describe the interrelationships between land, sea, the atmosphere and the living things that occupy these environments.
e. Discuss the role that humans play in affecting the characteristics of the environment.
f. Evaluate current environmental issues and problems including the solutions and management practices that have been used or offered to address these issues and problems.

Laboratory Student Learning Outcomes: Upon completing the course the student will be able to:
a. demonstrate approved techniques of handling laboratory and field specimens and equipment;
b. record data accurately and in proper form;
c. identify and recognize the characteristics of various taxonomic groups of plants and animals;
d. describe abiotic factors of the environment that impact plants and animals;
e. describe and give examples of the physical, chemical, and biological features of selected habitats/ecosystems.
f. explain the dynamics and interactions in natural populations and their environment; (demonstrates how the scientific method is used at each step to give evidence for interactions, and testable hypothesis, and what the results imply).

Required Text & Materials:
1. Access to a computer or device capable of reading the electronic version of:
   Essential Environment: The Science Behind the Stories, Fourth Edition
   Which can be purchased (subscription) at:
   http://www.coursesmart.com/IR/1279838/9780321753199?__hdv=6.8
2. USB Flashdrive (4Gig or More)

Additional Learning Resources:
In addition to the text and your lecture notes, I will make a variety of supplemental materials available through the course website and on the classroom’s workstations. This will include practice quizzes, lecture outlines, concept and keyword lists, images and videos of classroom demonstrations and lecture summaries. You will also be able to check your exam, quiz and overall grades for the course through the website.
Methods of Evaluation:
Two exams (midterm and final) are worth 50% of your lecture grade. Twelve class activities (including online quizzes and take-home assignments) worth 24% (2% each). The remaining 26% of your grade is for attendance and participation in the lecture course activities (about 2% each lecture). Note that attendance is not the same as participation, (definitions of each and what is expected will be described in the first and second lecture and labs).

The laboratory grade is based on attendance and participation (20%) documentation of field and lab activities demonstrated in a laboratory journal (50%) and a project, presentation or paper covering a current topic in environmental science or ecological issue (30%)

Absences: Lecture participation can not be made-up or substituted with other activities unless requested in the email two or more days before planned absence. No more than 4 planned absences for lectures will be "excused" for any reason. Full-credit makeup exams will only be given for documented illness or accident (i.e.: you must have a doctor's excuse or a copy of an official document such as a police report). If you miss an examination for any other reason you must complete the makeup exam within two days and you will only be able to earn 80% of your actual score (for example, if you score 90% x .8 = a grade of 72%). Makeup quizzes for unexcused absences will only be worth 50% of their original value and must be completed within one day of assignment. There is no extra credit of any kind.

WITHDRAWAL ("W" grade): If you decide to withdraw from the course, the paperwork must be completed by the last day for all withdrawals, which can be found on the calendar in the schedule of courses. The instructor will sign withdrawals only in cases of extreme or unusual circumstances. Grade-related excuses are unacceptable.
INCOMPLETE ("I" grade): A "Request for Incomplete" form must be presented prior to the last day of instruction. An "I" grade will only be given to students who are achieving passing grades and who are very close to completing the course. In addition, a student must have a very good reason for not being able to complete the work or test on time. Good reasons are the same as those cited in the withdrawal policy above.

Major Course Topics:
What is Environmental Science
The Environment beyond Science
Environmental Policy
Environmental Science Foundations: Chemistry
Environmental Science Foundations: Biology
Applications and Examples, + other N.S.
Evolution, Biodiversity and Populations
Ecology: Species diversity in Hawaii
Ecology: Species interactions
Ecology: Communities and Food webs
Applications: (Human) Populations
Human Pressures and Population Growth
Food and Agriculture: Can we feed ourselves?
Biodiversity and Conservation Biology
Applications: Hawaii species and Habitats
Land-use and Resource-management
Land: Geology and Soils
Water: Oceans and Fisheries
Water: Freshwater + resources
Air and Atmosphere
Climate
Global Scale Environmental Policy
Energy: Non-renewable
Energy: Renewable
Revisiting Land use and Policy
Waste management: Landfills and Dumps
# COURSE OUTLINE

**SYSTEM TRANSFER COURSES (ACCEPTED AT ALL CAMPUSSES)**

1. **Alpha and Number**
   - **Course Title**: BIOL 124/124L
   - **Credits**: 3 + 1 (3 lecture + 1 Lab, or 4 total for campuses that consider BIOL 124 a single lecture/lab course)

2. **Course Description**
   - Examines the biological and physical principles affecting human interactions with the environment. Explores the impacts of science, technology, and values on global ecology. Discusses problems of pollution, overpopulation, and resource depletion with an emphasis on island ecosystems. Evaluates alternatives to current actions and public policies stressing the responsibility of the individual.

3. **Contact Hours/Type**
   - 3 hours lecture per week

4. **Prerequisites**
   - Placement at ENG 100

5. **Corequisites**
   - BIOL 124 L (Laboratory optional, offered at Hilo and HonCC campuses as a separate course: 124/124L )

6. **Recommended Preparation**
   - High-school Chemistry and Biology

7. **General Course Objectives**

   Biology 124 is designed to increase knowledge and awareness of environmental issues. This course encourages individual responsibility for environmental protection. It covers scientific concepts in the areas of geography, geology, meteorology, and biology in the context of the natural ecosystems of Hawai‘i. Students will use the scientific method of problem solving and critical thinking skills to analyze current environmental issues and the impacts of humans on natural systems.
For detailed information on how Biology 124 focuses on the Maui Community College general education standards, see the attached curricular grid.

Biology 124 fulfills four credits for the Natural Science requirement for A.A. and A.S. degrees at Maui Community College. This course fulfills the requirements for the University of Hawai'i at Manoa General Education, Diversification, Natural Science, Biological Sciences (D/B.). The lecture course at WCC, LCC and HonCC fulfills three credits and the (D/B) diversification requirement. and When taken with the 124L laboratory course it additionally fulfills students laboratory science (DY) requirement.

6. Student Learning Outcomes
   *For assessment purposes, these are linked to #7. Recommended Course Content.*

On successful completion of this course, students will be able to:

   a. describe the biological and physical principles of ecology including ecosystem productivity, major biogeochemical cycles, and energy flow;

   b. explain and give examples of the impacts of science and technology on global ecosystems;

   c. identify and explain the dynamics of various kinds of environmental pollution, including water, air, soil, noise, light, debris, and radioactivity;

   d. explain the basic principles of population dynamics, recent trends in population growth, factors affecting population growth, carrying capacity, consequences of overpopulation on environmental conditions including resource depletion, and methods that can be used to reduce population growth;

   e. discuss the unique environmental issues that affect island ecosystems, including habitat alteration and destruction, loss of biodiversity, and effects of introduced alien species;

   f. develop methods for evaluating current actions and public policies that are not environmentally sound;

   g. discuss and provide supporting evidence for alternatives to current local environmental practices; and

   h. develop a personal environmental statement and action plan.

Competencies and Student Learning outcomes for Laboratory Component

   a. demonstrate approved techniques of handling laboratory specimens and equipment;

   b. record data accurately and in proper form;

   c. identify and recognize the characteristics of various taxonomic groups of plants and animals;

   d. describe abiotic factors of the environment that impact plants and animals;

   e. describe and give examples of the physical, chemical, and biological features of selected habitats/ecosystems.
f. explain the dynamics and interactions in natural populations and their environment; (demonstrates how the scientific method is used at each step to give evidence for interactions, and testable hypothesis, and what the results imply).

7. Recommended Course Content and Approximate Time Spent on Each Topic

Linked to #6. Student Learning Outcomes.

1-2 weeks Biological and physical principles related to ecology (a)
2-4 weeks Environmental pollution (a, b, c)
1-2 weeks Population ecology (d)
2-4 weeks Environmental issues that affect island ecosystems (a, b, c, e)
1-2 weeks Current local environmental practices and public policies (a, b, c, d, e, f)
1-2 weeks Alternatives to current environmental actions (a, b, c, e, f, g)
1-2 weeks Personal environmental statements (a, b, c, e, f, g, h)
1-4 weeks Projects (a, b, c, d, e, f, g, h)

8. Text and Materials, Reference Materials, Auxiliary Materials and Content

At the time the course is offered, the text(s) and other materials will be selected from the best and most up-to-date materials available at the time, such as Wright & Nebel. 2002. Environmental Science: Toward A Sustainable Future (8th Edition), Prentice Hall.

9. Recommended Course Requirements and Evaluation

Course requirements will vary with the instructor and should include the following

0-8% attendance
0-50% notes or answers to questions on text assignments, supplemental articles, discussions, guest speakers, videos, DVDs, CDs, network TV programs, etc
0-8% study log
10-90% tests and quizzes
0-60% homework and class activities
0-50% individual and/or group projects, or service-learning projects

10. Methods of Instruction

Methods of instruction will vary with the instructor and should include, but not be limited to, the following:

a. quizzes and tests with feedback and discussion;
b. class discussions;
c. problem solving and critical thinking activities;
d. narrated 35-mm slide and/or PowerPoint presentations;

e. videos, DVDs, CD-ROMs with detailed viewing guide and discussion questions;

f. guest speakers and attendance at appropriate public lectures;

g. group activities;

h. oral reports and other student presentations;

i. games and simulations;

j. homework assignments such as

- reading, or watching, and writing summaries and reactions to environmental issues in the media including broadcast television, newspapers, video, magazines, journals, lectures, web-based material, and other sources;

- reading text and reference materials and answering discussion questions;

- researching environmental issues and problems;

k. web-based assignments and activities;

l. reflective journals;

m. group and/or individual research projects with reports or poster presentations;

n. study logs and study groups;

o. service-learning, community service, and/or civic engagement projects; and

p. other contemporary learning techniques (such as problem-based learning, investigative case-based learning, co-op, internships, self-paced programs, etc.)

6. CONFIRMATION OF CONTENT: HonCC, Maui, Manoa

7. CONFIRMED/ADOPTED BY: Dr. G. Witteman, HonCC, 8/2009