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

APPLICANT: G. Witteman

E-MAIL: witteman@hawaii.edu

COURSE ALPHA and NUMBER: BIO 172

COURSE TITLE: Introductory Biology II

ESTIMATED NUMBER OF SECTIONS:
   Fall: 1
   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 172 course student learning outcome alignment with diversication halmarks (DB1-3) is shown here. Note that most of the SLOs for this course address multiple diversification areas directly. (The course has seven primary SLOs numbered 1-7 below).

**NOTE:** As this is the second-semester foundation biology course for majors, all language used to teach biology in the foundation biology course for biology majors necessarily must use the "terminology of the biological sciences". All principles presented in the course are biological so all "involve knowledge and theories related to the biological sciences". As biology is a natural science, the only progress of the discipline must be through application or use of the scientific method alone (sole basis of discovery)

**DB.1 uses the terminology of the biological sciences. The course SLO's addressing this area are: 1-7 (all) Each of the following clearly relies on proper use of biological terminology**

1. Distinguish between the major groups of higher plants by recognizing the anatomical, morphological, developmental features, and life cycles defining these groups.
2. Distinguish between the major groups of animals by recognizing the anatomical, morphological, and developmental features defining these groups.
3. Describe the biology of higher plants, including the following concepts: basic plant characteristics, plant adaptations to terrestrial versus aquatic life styles, and vascular plant reproduction, growth, anatomy, nutrition, transport mechanisms, and hormonal integration.
4. Describe the biology of animals, including the following concepts: adaptations to terrestrial versus aquatic life styles, embryology, behavior, and the anatomy and physiology of animal organ systems (i.e., digestion, respiration, circulation, osmoregulation, thermoregulation, immunity, reproduction, nervous, and endocrine system).
5. Describe the basic principles of ecology, including population ecology, community ecology, and ecosystem function.
6. Describe the characteristics of the major biomes and ecosystems of the Earth.
7. Describe the interrelationships between land, sea, the atmosphere and the living things that occupy these environments.

**DB.2 involves knowledge and theories relating to processes in the biological sciences; 1-7 (all) Each of the following relies on a fundamental knowledge and understanding of a foundation biological principles:**

1. Distinguish between the major groups of higher plants by recognizing the anatomical, morphological, developmental features, and life cycles defining these groups. (Principles: morphology, anatomy, life-cycles)
2. Distinguish between the major groups of animals by recognizing the anatomical, morphological, and developmental features defining these groups. (Principles: morphology, anatomy, life-cycles)
3. Describe the biology of higher plants, including the following concepts: basic plant characteristics, plant adaptations to terrestrial versus aquatic life styles, and vascular plant reproduction, growth, anatomy, nutrition, transport mechanisms, and hormonal integration. (Principles: adaptation, homeostasis)
4. Describe the biology of animals, including the following concepts: adaptations to terrestrial versus aquatic life styles, embryology, behavior, and the anatomy and physiology of animal organ systems (i.e., digestion, respiration, circulation, osmoregulation, thermoregulation, immunity, reproduction, nervous, and
endocrine system). (Principles: anatomy, physiology, ecology, homeostasis, trophic level)
5. Describe the basic principles of ecology, including population ecology, community ecology, and ecosystem function. (Principles: adaptation, competition, predation, trophic-level, anatomy/physiology, habitat)
6. Describe the characteristics of the major biomes and ecosystems of the Earth. (Principles: habitat, ecological niche, food webs, biodiversity)
7. Describe the interrelationships between land, sea, the atmosphere and the living things that occupy these environments. (Principles: same as both # 5 and 6)

DB.3 demonstrates inquiry that is guided by observation/experiment and reasoning/mathematics. 1-7 (all). As does all foundation principles of biology and natural sciences, each of the following derives only from an application of the scientific method:

1. Distinguish between the major groups of higher plants by recognizing the anatomical, morphological, developmental features, and life cycles defining these groups. (Derived from observation, hypothesis and data-gathering/tests/experiments, currently using molecular genetics)
2. Distinguish between the major groups of animals by recognizing the anatomical, morphological, and developmental features defining these groups. (Derived from observation, hypothesis and data-gathering/tests/experiments, currently using molecular genetics)
3. Describe the biology of higher plants, including the following concepts: basic plant characteristics, plant adaptations to terrestrial versus aquatic life styles, and vascular plant reproduction, growth, anatomy, nutrition, transport mechanisms, and hormonal integration. (Derived from observation, hypothesis and data-gathering/tests/experiments, currently using molecular genetics)
4. Describe the biology of animals, including the following concepts: adaptations to terrestrial versus aquatic life styles, embryology, behavior, and the anatomy and physiology of animal organ systems (i.e., digestion, respiration, circulation, osmoregulation, thermoregulation, immunity, reproduction, nervous, and endocrine system). (Derived from observation, hypothesis and data-gathering/tests/experiments, using a variety of biology and biochemistry techniques)
5. Describe the basic principles of ecology, including population ecology, community ecology, and ecosystem function. (Derived from observation, hypothesis and data-gathering/tests/experiments, currently uses statistical analysis)

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, take-home and in-class quizzes and assignments. Students will demonstrate their mastery of all SLO's above in tests and exams, and during the course's lecture and discussions.

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.

Instructors are provided with material and asked to follow the coverage and emphasis of topics in the U.H. system outline for this course. As the foundation for their degrees in biological sciences, and articulated/numbered/transferred between all campuses, every effort is 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: 1/11/13
Biology 172/172L: Biology II

Instructor: Dr. Greg Witteman  
Office: 5-101B Phone: 847-9847  
Class Times: MW 10-1130, Lab: Th 10-1250  
web: TBD  
Classroom: 5-105  
E-mail: witteman@hawaii.edu  
Office hours: M-F(9-10)

COURSE DESCRIPTION: Introductory biology for all life science majors. This is the second semester of a two semester introductory biology course series (Biology 171/171L is the first semester Continuation of BIOL 171. This course continues the exploration of biology with emphasis on biological diversity, anatomy and physiology of plants and animals, ecology and the biosphere. (3 hrs. lect., 1 hr. Lab).

Prerequisite: BIOL 171 and BIOL 171L, CHEM 161. Taking 172 without the corresponding lab is strongly discouraged, and enrolling in 172L without prior completion or current enrollment in the lecture (172) course is not allowed.

Biology 172/172L is the second semester of the two-semester foundation biology course series for life-science majors. It fulfills the University of Hawaii Community Colleges’ Natural Science requirement for the A.A. and A.S, degrees and the University of Hawai‘i at Manoa, General Education Requirements for Diversification, Natural Sciences, Biological Sciences (DB; 3 credits). The laboratory portion of this course sequence (171L) fulfills laboratory diversification requirements (DY; 1 credit).

Schedule of Topics (note: textbook reading assignments will be given in class)

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Plant evolution and diversity</td>
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<td>2</td>
<td>Plant morphology</td>
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<tr>
<td>3</td>
<td>Plant reproduction and development</td>
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<td>4</td>
<td>Transport mechanisms in plants</td>
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<td></td>
<td>Regulation and control mechanisms in plants</td>
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<tr>
<td>Midterm I</td>
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<tr>
<td>5-6</td>
<td>Animal evolution and diversity</td>
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<tr>
<td>7-8</td>
<td>Animal digestion, nutrition, respiration, circulation, and immunity</td>
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<tr>
<td>9-10</td>
<td>Animal homeostasis (thermoregulation, osmoregulation, and excretion), and endocrine system</td>
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<tr>
<td>11</td>
<td>Animal sexual reproduction, development, and embryology</td>
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<td>12</td>
<td>Neurons and the nervous-sensory system</td>
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<td>Midterm II</td>
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<tr>
<td>13</td>
<td>Animal behavior: evolutionary considerations, mechanisms of behavior, developmental behavior, and comparative animal behavior</td>
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<td>14</td>
<td>Ecology: populations, communities, ecosystems</td>
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<td>15</td>
<td>Problems encountered in island ecosystems</td>
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<td></td>
<td>Conservation of natural resources</td>
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<td>Midterm III (Final exam is given in “Finals Week”)</td>
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TEXTS:

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 of specimens 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:
As the course material is the same in lecture and lab, you will receive the same letter grade for both. The Lecture is weighted as ¾ of the overall grade (75%) and the lab counts for ¼ (25%) of your grade. Your final grade will be based on the total number of points that you receive out of a possible 400 points. If you are only taking the lecture or lab portions of the class
you will be graded accordingly (As students attempting to take only one of the courses have had poor outcomes, it is strongly recommended to take both lecture and lab concurrently at HCC).

For the lecture’s 300 course points there will be 3 lecture exams worth 75 points (225 points total) and 5 lecture quizzes or assignments worth 15 points (75 points total). For the 100 points possible in lab, there will be three lab practical examinations worth 25 points each (75 points total) and 5 lab quizzes or exercises worth 5 points each (25 points total).

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 a week and you will only be able to earn a maximum of 70% of the points. Makeup quizzes for unexcused absences will only be worth 10 points maximum (50%). If you score less than a passing grade or are absent for any quiz, exam, or exercise YOU MUST COMPLETE A MAKEUP QUIZ OR ASSIGNMENT WITH A PASSING GRADE TO RECEIVE A FINAL GRADE FOR THE COURSE. 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. I will sign withdrawals only in cases of extreme or unusual circumstances. Grade-related excuses are unacceptable. If you simply disappear without withdrawing, you will receive an F for the course. Withdrawals after the designated time will be allowed by the college only in cases of extreme circumstances. Examples are a certified medical reason or a death in the immediate family.

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.

Points needed for letter grades:

- 360-400 = A = 90-100%
- 320-359 = B = 80-89%
- 280-319 = C = 70-79%
- 240-279 = D = 60-69%
- 0-239 = F = <60%

Lecture Student Learning Outcomes:

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

1. Distinguish between the major groups of higher plants by recognizing the anatomical, morphological, developmental features, and life cycles defining these groups.
2. Distinguish between the major groups of animals by recognizing the anatomical, morphological, and developmental features defining these groups.
3. Describe the biology of higher plants, including the following concepts: basic plant characteristics, plant adaptations to terrestrial versus aquatic life styles, and vascular plant reproduction, growth, anatomy, nutrition, transport mechanisms, and hormonal integration.
4. Describe the biology of animals, including the following concepts: adaptations to terrestrial versus aquatic life styles, embryology, behavior, and the anatomy and physiology of animal organ systems (i.e., digestion, respiration, circulation, osmoregulation, thermoregulation, immunity, reproduction, nervous, and endocrine system).
5. Describe the basic principles of ecology, including population ecology, community ecology, and ecosystem function.
6. Describe the characteristics of the major biomes and ecosystems of the Earth.
7. Describe the interrelationships between land, sea, the atmosphere and the living things that occupy these environments.

Laboratory Student Learning Outcomes

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

1. Demonstrate approved techniques of handling laboratory specimens and equipment;
2. Record data accurately and in proper form;
3. Identify and recognize the characteristics of various taxonomic groups of plants and animals;
4. Describe the structural features of selected plants and animals;
5. Explain the physiological functions of the organisms studied;
6. Explain the dynamics and interactions in natural populations;
7. Describe and give examples of the physical, chemical, and biological features of selected habitats/ecosystems.