University of Hawaii Community Colleges
Proposal to Initiate, Modify or Delete a Course

1. Type of Action
   - A. Addition
   - B. Deletion
   - C. Modification: in credits, in title, in prerequisites or co-requisites, in number or alpha, Other (click to specify)

2. New Alpha, Number and Title
   - BIOL 265 Ecology and Evolutionary Biology

3. Credits
   - 3 credits

4. Old Alpha, Number and Title

5. Credits
   - *

6. New Catalog Description
   Principles of ecology and evolution for life science majors stressing integrated approach and recent advance.

7. Select box and type specific information in text box.
   - Prerequisites
   - Corequisites or Recommended Preparation
   - Pre: BIOL 171/171L and 172/172L; or one year of introductory college biology plus labs; or equivalent preparation; or consent of instructor. Co: BIOL 265L; or consent of instructor.

8. Student Contact Hours Per Week
   - Lecture 3
   - Lecture/Lab
   - Lab
   - Other (click to specify)

9. Proposed Date of First Offering
   - Semester Fall Year 2004

10. This course is proposed for the Liberal Arts Program Program. can fulfill ASC Elective If Other, specify Academic Subject Area Certificate in Bio-Resources and Technology

11. This course Makes No Difference in the number of credits required for the program/core.

12. Equivalent or similar courses offered in the UH System:

<table>
<thead>
<tr>
<th>Campus</th>
<th>Alpha, Number, Title</th>
<th>Campus</th>
<th>Alpha, Number, Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>UH Man</td>
<td>BIOL 265 Ecology and Evolutionary Biology</td>
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</tbody>
</table>

13. This course is (check one and click in appropriate textbox and provide details):
   - Already articulated with Provide details of existing or desired articulation (date, college(s), purposes, pre-major, etc.) in this space:
   - Appropriate for Articulation with Provide details of existing or desired articulation (date, college(s), purposes, pre-major or major, etc.) in this space: Fall 2004, UHM, Equal to BIOL 265, required for baccalaureate degrees in Biology
   - Not yet appropriate for Articulation.

14. Reason for Initiating, Modifying or Deleting Courses or Other Pertinent Comment:

Requested by: Department Chairperson
Approved by: Curriculum Committee Chairperson
Faculty Senate Chairperson
Dean of InSTRUCTION
Provost

Date

CCCM #6100 (Amended for WCC use October 2002)
University of Hawaii Community Colleges
Proposal to Initiate, Modify or Delete a Course

Levels of Review of Course Proposal at Windward Community College

Course Alpha, Number, and Title: BIOL 265 Ecology and Evolutionary Biology

Signatures

1. Department Area (more than one departmental instructor's signature required)
   
   
   Dates
   
   12/4/02
   
   12/4/02

   
   12/4/02

   12/4/02

2. Department
   
   Department Chairperson

   Dates
   
   12/4/02
   
   12/4/02

   
   12/4/02

   
   12/10/02

   
   12/9/02

3. Division

   Dates
   
   12/10/02

4. Curriculum Committee Review

   Approved ☑ 5-0
   Disapproved ☐

   Reason:

   Curriculum Committee Chairperson

   Dates
   
   February 11, 2003

CCCM #6100 (Amended for WCC use October 2002)
WCC Form for New Course Proposals
(This sheet was originally pink.)

1. How is this course related to the education needs and goals of the College/Department/Community as reflected in the EDP/ADP?

   Consistent with the WCC ADP goal to "provide the necessary courses for WCC students to take their first two years of a baccalaureate degree in any of the traditional natural science disciplines." In addition, this class may be used in partial satisfaction of the Academic Subject Certificate in Bio-Resources and Technology (Bio-Resources Development and Management track).

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?

   No additional resources will be required for this course. This course will initially be offered in alternate years with the BIOL 171/172 series.

3. Is a similar course taught elsewhere in the UH system? Yes If yes, provide details of how this course differs from existing similar courses.

   This course was designed based upon the model provided by the identical course (BIOl 265) offered at UHM.

4. Is this course experimental and/or unique to Windward Community College? No If yes, provide rationale and details of its impact on the College Curriculum

5. Is a similar course taught in the upper division level by a 4-year UH college? Yes If yes, explain why this course is appropriate at the lower division or how it differs from its upper division counterpart.

   This course, identical to UHM's BIOI 265 course, functions as a sophomore level bridging course that helps in the transition from freshman biology to upper division courses in the life sciences.

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 criteria for transfer courses.

CCCM #6100 (Amended for WCC use September 2002)
Original dated WCC 9/91
Course Alpha and Number BIOL 265

Submitted by  David Krupp

Date December 4, 2002

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

   BIOL 265 at UHM. This course is required for a baccalaureate degree in Biology at UHM.

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

   BIOL 301, Ecology and Evolution, at the University of South Carolina.

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.
1. Articulation committee to review this course:

   Standing Committees
   - Written Communication
   - Mathematical & Logical Thinking
   - World Civilizations
   - Languages
   - Arts & Humanities
   - Natural Science
   - Social Science

2. The information in this item is required by the reviewing committee so that it has a starting point for reviewing the course. It is the responsibility of the submitting campus to do the necessary research to provide this information.

   In the opinion of the originating campus, this course is equivalent to the following and/or meets the criteria for the indicated core categories. Every core category space, except your own campus, must be filled in (can include 'none'). An equivalent course, if known, may be helpful to committee members but is not required.

<table>
<thead>
<tr>
<th>Receiving Campus</th>
<th>Equivalent Course (Alpha and Number)</th>
<th>Core Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>UH Hilo</td>
<td>BIO 265</td>
<td>NS - L NS</td>
</tr>
<tr>
<td>UH Mānoa</td>
<td></td>
<td>DB</td>
</tr>
<tr>
<td>UH West O'ahu</td>
<td></td>
<td>NS-1</td>
</tr>
<tr>
<td>Hawai'i CC</td>
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<td>NS-1</td>
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<td>Honolulu CC</td>
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<td>NS-1</td>
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<td>NS-1</td>
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<td>Kaua'i CC</td>
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<td>Leeward CC</td>
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<td>NS-1</td>
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<tr>
<td>Maui CC</td>
<td></td>
<td>NS</td>
</tr>
<tr>
<td>Windward CC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. I am submitting electronically. I understand that this outline will be posted to a publicly accessible web site to enable open access for reviewing committees and campuses. The outline will be taken off the site upon completion of the review.

   ________________________________
   Typed Name or Signature

Revised 7/15/02
WINDWARD COMMUNITY COLLEGE
OUTLINE OF COURSE OBJECTIVES

COURSE NAME: Ecology and Evolutionary Biology

COURSE ALPHA: BIOL 265

CREDIT HOURS: 03

CATALOG DESCRIPTION:

Principles of ecology and evolution for life science majors stressing integrated approach and recent advance. (3 hrs. lect.)

REQUIREMENTS COURSE SATISFIES:

Partially fulfills requirements for the Academic Subject Area Certificate in Bio-Resources and Technology (Bio-Resources Development and Management track) at WCC.

PREREQUISITES: BIOL 171/171L and 172/172L; or one year of introductory college biology plus labs; or equivalent preparation; or consent of instructor.

CO-REQUISITES: BIOL 265L; or consent of instructor.

INSTRUCTOR:

OFFICE:

TELEPHONE:

E-MAIL:

COURSE HOMEPAGE:

INSTRUCTOR'S HOMEPAGE:

EFFECTIVE DATE:
COURSE GOALS

Upon completion of this course, you should:

➢ have an appreciation and general understanding of the principles of ecology and evolution, especially how these two fields are inter-related;

➢ be aware of the major theoretical and applied problems currently being studied by ecologists and evolutionary biologists;

➢ understand how theories and research in ecology and evolution can be used in solving conservation problems;

➢ appreciate the value of the Hawaiian environment in addressing questions in ecology, evolution, and conservation.

COURSE OBJECTIVES

The student will describe and integrate basic principles of ecology and evolution, defining basic terms presented in lecture and required texts, citing specific examples (especially Hawaiian examples) when asked for. These basic principles include the following areas:

➢ the history of the fields of evolution and ecology;

➢ definitions of evolution, evolution as the unifying principle of biological science, and microevolution versus macroevolution;

➢ natural selection, Darwin’s theory for a mechanism of evolutionary change;

➢ sexual selection, a special case of natural selection;

➢ units of selection: group and kin selection, selection on species and clades;

➢ species concepts and speciation (mechanisms and patterns);

➢ common ancestry, the evidence of homology, and adaptive radiation;

➢ the history of life on earth, the fossil record, patterns of evolutionary change, pace and tempo of evolutionary change, role of extinction, and patterns and causes of extinction;

➢ human evolution;

➢ principles of heredity as they apply to evolutionary change;

➢ genetics systems (e.g., different genetic systems, the role of sex and genetic recombination, and the cause and maintenance of genetic diversity, etc.);

➢ change in gene frequencies (e.g., deviations from Hardy-Weinberg equilibrium, founder effect, genetic drift, etc.)

➢ genetic and molecular evidence in the establishment of evolutionary relationships and rates of evolutionary change;
cladistics and biological classification systems;

- characteristics of the abiotic environment that affect living things and the adaptations and physiological adjustments (acclimations) organisms exhibit that allow them to cope with this environment;

- role of environmental factors (e.g., temperature, rainfall, etc.) in determining global patterns of species distributions and abundance, and biome classification;

- organism life histories (reproductive modes and patterns, energy allocation, generalists vs. specialists, r and K selection, senescence, etc.);

- characteristics of populations (e.g., models of population growth, age structure, life tables, dynamics, density-dependent vs. density-independent factors influencing population growth, human population growth, etc.);

- species-to-species interactions (e.g., competition, predation, symbioses, etc.);

- characteristics of communities (e.g., structure, food chains and food webs, succession, effects of disturbance, etc.);

- characteristics of ecosystems (e.g., energy flow, biogeochemical cycles, biodiversity, complexity vs. stability, etc.);

- island biogeography with special emphasis on Hawai‘i;

- applying the concepts of evolution and ecology to conservation biology with special reference to Hawaiian flora and fauna.

In addition, the student will be introduced to contemporary issues in ecology and evolution through assigned readings from recent literature and specific writing assignments.

To help you achieve the course objectives, you may be provided with lecture outlines that include vocabulary terms and study questions. You should use these materials as guides to help you focus on what materials to study.

MODE OF INSTRUCTION

The previously described objectives will be achieved through the aid of the following learning activities:

- Assigned readings;
- Lecture and demonstrations;
- Multimedia presentations, including computer-assisted and internet-assisted activities;
- Examinations; and a
- Writing assignments.

The material presented in all modes of instruction will be of an introductory nature but sufficient in content to allow continuation in higher level biological science courses required for biological science majors. Assigned readings will serve to provide background and supplemental information to provide a broad base for a basic study of biology. Class lectures will build upon
this base, helping to focus the student to some of the more important details. Lecture study guides may be provided to help students focus upon the more significant details from the lecture and text. Multimedia presentations will graphically illustrate course content. Students may also be given the opportunity to access learning tools available through CD-ROM and internet technologies.

EVALUATION OF OBJECTIVE ACHIEVEMENT

EXAMINATIONS. The student will take 1 midterm examination (100 points) and a cumulative final examination (150 points) to demonstrate understanding of information presented primarily during lectures. NO RETESTS will be given. A student missing an exam because of an illness or legitimate emergency may take a make-up exam only during the FIRST class meeting to which the student returns. In such a circumstance, the student should make every reasonable attempt to contact the instructor before the exam is administered to the class (or as soon as possible). While make-up exams will cover the same content area as a missed exam, the exam format and specific questions may be different.

QUIZZES. The student will take 12-14 quizzes (15 points each) administered ONLY during the first 10 minutes of the lecture meetings or through WebCT (approximately one quiz per week will be issued). These non-cumulative quizzes will cover information presented during the previous lecture sessions. Of these quizzes, only the 10 best scores will be included in the student's point total (150 points total). NO MAKE-UP QUIZZES FOR ANY ABSENCES (EVEN RESULTING FROM LEGITIMATE ILLNESS) OR LATE ARRIVALS WILL BE ADMINISTERED.

RESEARCH PAPER. The student will write five short essays (generally 3-4 pages, double-spaced, typed text; 20 points each, 100 points total) during the course of semester summarizing and interpreting current issues in ecology and evolution. These essays will be based upon reading assignments from the current literature. Specific details about these writing assignments will be presented in class.

METHOD OF GRADING

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

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm Examination</td>
<td>100</td>
</tr>
<tr>
<td>Final Examination</td>
<td>150</td>
</tr>
<tr>
<td>Quizzes</td>
<td>150</td>
</tr>
<tr>
<td>Essay Assignments</td>
<td>100</td>
</tr>
<tr>
<td>TOTAL</td>
<td>500</td>
</tr>
</tbody>
</table>

LATE ASSIGNMENTS will be PENALIZED. Assignments must be received by the assignment due date. Late assignments received during the first week after the due date may be assessed a penalty equivalent to 15% of the total points possible for that assignment. Assignments submitted more than one week following the due date will not be accepted for a score.

NO EXTRA CREDIT opportunities will be provided. The student should focus his/her attention on the information required for quizzes, examinations, and the writing assignments.

Letter grades will be assigned as follows:
A ------- 90% or above in total points.
B ------- 80-89.9% of total points.
C ------- 65-79.9% of total points.
D ------- 55-64.9% of total points.
F ------- Below 55% of total points 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; 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; 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 requirements for specific grades 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. Academic dishonesty is defined in WCC's college catalog.

STUDENT RESPONSIBILITIES

Students are expected to participate in all lecture 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, study guides and handouts) assigned for that day's activities and bringing required work materials (e.g., textbook, handouts, writing supplies, etc.).

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 NOT assume that because the content of this class is introductory in nature the class will be easy. Students should expect a level of difficulty comparable to other 200-level science classes intended for majors in the discipline. When difficult concepts and detailed information are presented, it is the student's responsibility to take the appropriate steps to learn and understand these concepts and information.

Science courses at W.C.C. generally require two to three hours of independent private study time for each hour in class. However, because of the nature of the material presented in BIOL
265, more study time may be required (depends upon the student's science/biology background). It is the student's responsibility to allocate the appropriate time needed for study in an environment conducive to quality study. The student must budget time efficiently and be realistic about all personal and professional commitments that consume time.

HOW TO SUCCEED IN THIS CLASS

Understanding biological science involves understanding many difficult concepts and vocabulary, not just knowing facts. You should know that the details to these concepts are important. In addition, you will be introduced to hundreds of new words. In some cases, words that are familiar to you in a context other than biology will be introduced to you in the context of biology. You will need to understand and use these terms in a biological science context.

While you may refer to lecture outlines that include study guides, you will not succeed in this class unless you take your own careful lecture notes and read the corresponding material in the textbook. The lecture outlines are not to be used in place of your own note taking. As soon as possible (best if you do it the same day), copy over your lecture notes filling in gaps and missing information by referring to the lecture outlines and textbook. You should carefully review these rewritten lecture notes as often as possible. In addition to reviewing these notes before an exam, it would be useful to try to rewrite these notes from memory.

In addition to copying over your lecture notes, your study activities should include drawing your own labeled diagrams or graphs that illustrate important biological phenomena (e.g., the internal structure of the cell, the stages of cell division, or the population growth curve). These diagrams need not be works of art, but should clearly illustrate significant information. Before an exam, it would be useful to redraw these labeled diagrams and graphs from memory.

Make flashcards for each new vocabulary word you learn (refer to study guides provided for a list of terms). On one side write the word. On the other side write the appropriate biological science definition for the word. Test your ability to provide the right definition as often as possible. Practice using the word to explain biological concepts.

Write out answers to all of the study guide questions as though you were required to turn them in. Allow someone else to read your answers and give you feedback. Read someone else's answers and provide constructive feedback.

Read the textbook materials corresponding to a particular lecture before and after that lecture. Review this material before exams.

TEXTBOOK AND OTHER ASSIGNED INSTRUCTIONAL MATERIALS


Other reading assignments may be found on reserve in the library, provided in class, or accessed through the internet.

OTHER INFORMATION

Important Dates:
Last day to add a class
Last day of erase period
Last day for official withdrawal

Instructor’s Office Hours (or by appointment):
<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Topic</th>
<th>Text Readings</th>
</tr>
</thead>
<tbody>
<tr>
<td>26-Aug</td>
<td>M</td>
<td>Course Introduction</td>
<td></td>
</tr>
<tr>
<td>28-Aug</td>
<td>W</td>
<td>The Evidence for Evolution</td>
<td></td>
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<tr>
<td>30-Aug</td>
<td>F</td>
<td>Darwin: Life, Times and Theory</td>
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<tr>
<td>2-Sep</td>
<td>M</td>
<td>HOLIDAY: Labor Day</td>
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<tr>
<td>4-Sep</td>
<td>W</td>
<td>Developments since Darwin</td>
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<tr>
<td>6-Sep</td>
<td>F</td>
<td>Mutation and Genetic Variation</td>
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<tr>
<td>9-Sep</td>
<td>M</td>
<td>Population Genetics: Hardy-Weinberg Equilibrium</td>
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<tr>
<td>11-Sep</td>
<td>W</td>
<td>Population Genetics: Selection and Mutation Effects</td>
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<tr>
<td>13-Sep</td>
<td>F</td>
<td>Population Genetics: Migration, Genetic Drift &amp; Nonrandom Mating</td>
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<tr>
<td>16-Sep</td>
<td>M</td>
<td>Role of Linkage and Sex in Genetic Change</td>
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<tr>
<td>18-Sep</td>
<td>W</td>
<td>Speciation: Species Concepts &amp; Species Formation</td>
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<tr>
<td>20-Sep</td>
<td>F</td>
<td>Speciation: Isolating Mechanisms &amp; Hybridization</td>
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<tr>
<td>23-Sep</td>
<td>M</td>
<td>Sexual Selection, Kin Selection, &amp; Social Behavior</td>
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<tr>
<td>25-Sep</td>
<td>W</td>
<td>Adaptation: Form &amp; Function</td>
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<tr>
<td>27-Sep</td>
<td>F</td>
<td>Reconstructing Evolutionary Trees</td>
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<tr>
<td>30-Sep</td>
<td>M</td>
<td>Origins of Life</td>
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<tr>
<td>2-Oct</td>
<td>W</td>
<td>Precambrian Evolution</td>
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<td>4-Oct</td>
<td>F</td>
<td>Punctuated Equilibrium and Gradualism</td>
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<td>7-Oct</td>
<td>M</td>
<td>The Cambrian Explosion &amp; Beyond</td>
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<td>9-Oct</td>
<td>W</td>
<td>Extinction</td>
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<td>11-Oct</td>
<td>F</td>
<td>Development and Evolution</td>
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<td>14-Oct</td>
<td>M</td>
<td>Molecular Evolution</td>
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<td>16-Oct</td>
<td>W</td>
<td>Human Evolution</td>
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<tr>
<td>18-Oct</td>
<td>F</td>
<td>Hawaiian Islands: Laboratory of Evolution</td>
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<tr>
<td>21-Oct</td>
<td>M</td>
<td>MIDTERM EXAMINATION</td>
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<tr>
<td>23-Oct</td>
<td>W</td>
<td>Abiotic environment -- climate, biomes</td>
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<tr>
<td>25-Oct</td>
<td>F</td>
<td>Abiotic environment - adaptations, physiological ecology</td>
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<tr>
<td>28-Oct</td>
<td>M</td>
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<tr>
<td>30-Oct</td>
<td>W</td>
<td>Organism life histories</td>
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<tr>
<td>1-Nov</td>
<td>F</td>
<td>Population - structure, methods of study</td>
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<tr>
<td>4-Nov</td>
<td>M</td>
<td>Population - simple growth models</td>
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<tr>
<td>6-Nov</td>
<td>W</td>
<td>Population - life tables</td>
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<tr>
<td>8-Nov</td>
<td>F</td>
<td>Population - dynamics</td>
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<tr>
<td>11-Nov</td>
<td>M</td>
<td>HOLIDAY: Veteran's Day</td>
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<tr>
<td>13-Nov</td>
<td>W</td>
<td>Population - analysis, human population</td>
<td></td>
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<tr>
<td>15-Nov</td>
<td>F</td>
<td>Species interactions -- competition I</td>
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<tr>
<td>18-Nov</td>
<td>M</td>
<td>Species interactions -- competition II</td>
<td></td>
</tr>
<tr>
<td>20-Nov</td>
<td>W</td>
<td>Species interactions -- mutualism, herbivory, parasites</td>
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<tr>
<td>22-Nov</td>
<td>F</td>
<td>Species interactions -- predation I</td>
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<td>25-Nov</td>
<td>M</td>
<td>Species interactions -- predation II</td>
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<tr>
<td>27-Nov</td>
<td>W</td>
<td>Communities -- structure</td>
<td></td>
</tr>
<tr>
<td>29-Nov</td>
<td>F</td>
<td>THANKSGIVING RECESS</td>
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<tr>
<td>2-Dec</td>
<td>M</td>
<td>Communities -- development</td>
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<tr>
<td>4-Dec</td>
<td>W</td>
<td>Communities -- diversity</td>
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Text Readings: F Ch 2, 3, 5, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 28, 29, 30, 31.
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<th>Day</th>
<th>Topic</th>
<th>Text Codes</th>
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<td>R Ch 6</td>
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<td>M</td>
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Text Codes