Plant Ecology BIOL 3479
Department of Life Sciences
Spring 2016

A. COURSE INFORMATION

Course number/section: Biology 3479.001
Class meeting time: Lecture: Tuesday-Thursday 11-12:30
Laboratory: Thursday 1-3:50
Class location: Lecture: BH 126
Laboratories: CS 240
Course Website: None

B. INSTRUCTOR INFORMATION

Instructor: Dr. Roy L. Lehman
Office location: CS247
Office hours: Tuesday-Thursday 9-10:30 am & 1-2 pm; Wednesday 8-9 am
Telephone: 825-5819
e-mail: roy.lehman@tamucc.edu
Appointments: Additional hours by appointment, please call or email.

C. COURSE DESCRIPTION

Catalog Course Description

Structure, physiology, life cycles, and economic impact of plants. Factors influencing diversity, succession and ecological distribution of plants.

Extended Course Description

The study of the functional relationships and productivity of plant communities as they are affected by their physical, chemical and biotic environment. Laboratories emphasize the quantitative analysis of field data, evaluation of environmental factors effecting plant survival and distribution and community concepts and attributes of plant ecological units.

D. PREREQUISITES AND COREQUISITES

Prerequisites
BIOL 1407
Corequisites
None.

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Required Textbook

Optional Textbook(s) or Other References


F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to:

1. describe the environmental characteristics which effect the distribution and abundance of plants within an ecosystem including Light, temperature, fire, soil type, and plant water relations.

2. describe the environmental characteristics which effect the distribution and abundance of plants within an ecosystem including Light, temperature, fire, soil type, and plant water relations.

3. describe the chemical factors which effect population dynamics and resource allocation within the ecological unit including, including organic and inorganic compounds (i.e. oxygen, carbon dioxide, nitrogen, phosphorus and other nutrients).

4. summarize the characteristics of plant ecosystems including major vegetation types of North America.

5. discuss food-chain dynamics of plant ecosystems including parasitism, herbivory, resource limitations, and energy and nutrients transformation through successive trophic levels.

6. explain methods of managing plant systems including the development of solutions to environmental problems.

7. discuss and explain methods of management of marine plant systems.
G. INSTRUCTIONAL METHODS AND ACTIVITIES

The class will be primarily lecture with support of activities in the laboratory and field. A field project with identification of plants will provide the student with the opportunity to practice and complete the activities used to evaluate plant distribution and abundance.

H. MAJOR COURSE REQUIREMENTS AND GRADING

LABORATORY REQUIREMENTS

<table>
<thead>
<tr>
<th>REQUIREMENT</th>
<th>VALUE</th>
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<tbody>
<tr>
<td>1. Students will complete an ecological plant-sampling project with report</td>
<td>300</td>
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<tr>
<td>2. Oral Presentation (100 points)</td>
<td>100</td>
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<td>TOTAL:</td>
<td>400</td>
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COURSE REQUIREMENTS

<table>
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<tr>
<th>VALUE</th>
<th>TOTAL</th>
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<tbody>
<tr>
<td>1. Lecture Examinations (3) (includes final) 150 points each</td>
<td>450</td>
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<tr>
<td>2. Projects (2) (See Laboratory Requirements above)</td>
<td>400</td>
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<tr>
<td>TOTAL:</td>
<td>850</td>
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FINAL GRADE: Total Number of points ÷ 850 = FG (%)

- 90-100% = A
- 80-89% = B
- 70-79% = C
- 60-69 = D
- 0-59 = F

FINAL EXAMINATION DATE: May 10, 2016 (11-1:30)

<table>
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<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
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<tr>
<td>Exams</td>
<td>48.78</td>
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<tr>
<td>Quizzes</td>
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<tr>
<td>Homework</td>
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<td>Presentations</td>
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I. COURSE CONTENT/SCHEDULE

A. THE SCIENCE OF PLANT ECOLOGY  
   1. Introduction to Plant Ecology  
   2. Brief History of Plant Ecology  

B. THE SPECIES AS AN ECOLOGICAL UNIT  
   1. The Species in the Environmental Complex.  
   2. Species Types and Descriptions.  

C. EVOLUTION AND POPULATION BIOLOGY  
   1. Arrangement of Individuals in Space and Time.  
   2. The Behavior of Individuals: Resource Allocation Patterns  

D. SPECIES INTERACTIONS  
   1. Competition, Amensalism, Commensalism  
   2. Mutualism  
   3. Protocooporation  
   4. Herbivory  

E. THE COMMUNITY AS AN ECOLOGICAL UNIT  
   1. Community Concepts and Attributes  
   2. Methods of Sampling the Plant Community  
   3. Methods of describing the Plant Community  
   4. Succession  
   5. Productivity  
   6. Mineral Cycles  

F. ENVIRONMENTAL FACTORS  
   1. Light and Photosynthesis  
   2. Temperature  
   3. Fire  
   4. Soil  
   5. Water  
   6. Plant Water Relationships  

G. MAJOR VEGETATION TYPES OF NORTH AMERICA  

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<tr>
<td>Lab Reports</td>
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<tr>
<td>Lab Exams</td>
<td>16.26</td>
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<tr>
<td>Other activities . . .</td>
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</table>
J. LABORATORY/FIELD TRIP TOPIC OUTLINE:

1/28 Lab # 1 Introduction
2/4 Lab # 2 Laboratory & Field Techniques
2/11 Lab # 3 Biotic Sampling Methods
2/18 Lab # 4 Field trials/lab work
2/25 Lab # 5 Substrate Analysis
3/3 – 3/5 Field Trip - (*A $20 fee for meals is required.)
3/10 Lab # 6 Scientific Analysis Techniques
3/14 – 3/18 Spring Break
3/24 Lab #7 Field Project Analysis Work Day
3/31 Lab # 8 Laboratory Research Work Day
4/7 Lab # 9 Professional Writing Skills & Techniques
4/14 Lab # 10 Research Work Day – Graphs & Tables
4/21 Lab # 11 Research Work Day – Soils & Vegetation
4/28 Lab # 12 Laboratory Projects Discussions

J. COURSE POLICIES

Follow College and University Policies.

K. COLLEGE AND UNIVERSITY POLICIES

- Academic Integrity (University)
  It is expected that university students will demonstrate a high level of maturity, self-direction, and ability to manage their own affairs. Students are viewed as individuals who possess the qualities of worth, dignity, and the capacity for self-direction in personal behavior.
  See Full University Policy at http://catalog.tamucc.edu/content.php?catoid=10&navoid=313#Academic_Integrity

- Classroom/Professional Behavior
  Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- Deadline for Dropping a Course with a Grade of W (University)
  The grade of W will be assigned to any student officially dropping a course by
Friday, April 8, 2016. No student is eligible to receive a W without completing the official drop process by this deadline. Visit the Office of the University Registrar for the Course Drop Form that must be submitted.

- **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at [http://www.tamucc.edu/provost/university_rules/index.html](http://www.tamucc.edu/provost/university_rules/index.html), and the College of Science and Engineering Grade Appeals webpage at [http://sci.tamucc.edu/students/GradeAppeal.html](http://sci.tamucc.edu/students/GradeAppeal.html). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**
  The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

  If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

  [http://disabilityservices.tamucc.edu/](http://disabilityservices.tamucc.edu/)

**GENERAL DISCLAIMER**

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.