PRINCIPLES OF BOTANY

Course Description: This course introduces students to the structure, function, diversity, evolution and application of plants. Features of both vascular and non-vascular plants, including life cycles, are explored. The anatomy of vegetative and reproductive organs of plants are studied. Physiological mechanisms and adaptations used by plants to adapt to their environments will be considered.

LEARNING OBJECTIVES

Upon successful completion of this course, the student will be able to describe:
1. Plant cell structure and distinguishing features
2. The role of biological macromolecules and be able to identify some important plant secondary metabolites
3. Respiratory and photosynthetic energy transformations
4. The anatomy of the plant body, including roots, stems, leaves, flowers, fruits and seeds
5. Circadian rhythms and plant growth and response to external factors, including tropisms, photoperiodism, nastic movements and dormancy
6. Plant nutritional requirements and nutrient cycles
7. Historical accomplishments, and the importance of and challenges to agriculture for food, fuel and environment
8. The mechanisms of plant reproduction and genetic variability
9. Issues and applications of recombinant DNA technology and biotechnology
10. And compare key features, evolution and systematics for protists, bryophytes, seedless vascular plants, gymnosperms and angiosperms

Major Course Requirements

Tentative Evaluation:
Your final grade will be based on the percentage you earn out of the total possible points. Individual extra credit is not possible, but extra points may be built into exams or other assignments. Statistical manipulations, if used (at the Instructor’s discretion), will be performed only once, at the end of the semester. A 10-point grading scale will be used:

- A = 90 - 100 %
- B = 80 - 89.9 %
- C = 70 - 79.9 %
- D = 60 - 69.9 %
- F = 0 - 59.9 %
Components of Course Grade (Tentative)

Lecture: 75%
  3 Exams @ 100 pts = 300

[Additional Assignments, Quizzes, Attendance @ Instructor’s Discretion = up to 100]

Laboratory: 25%
  (reports, quizzes, assignments, presentations) = 100

TOTAL = 400

The time schedule may require adjustment. Should this be the case, the assignments and weighting may change slightly. Additional assignments may or may not be provided at the Instructor's discretion. Such assignments might include homeworks, group projects, reading assignments, quizzes, etc. Regardless of any such changes, the lecture and laboratory weighting of your grade shall remain at 75% and 25%, respectively. For example, if you make 90% of total points available for the lecture and 80% of total points available for the laboratory portion, then your grade would be calculated as:

\[(0.9 \times 75) + (0.8 \times 25) = (67.5) + (20) = 87.5/100 \text{ possible} = \text{B}\]

An assignment will likely be due during the last week of class.

Every assignment will be made to follow the time and evaluation schedules shown here. It is the student’s duty to attend each class session and be aware of all assignments, deadlines, changes, etc.

NOTE: All Exams are the property of the Instructor as they must be saved for course records. Students may use the exams for study purposes during specified lab periods, but they must be saved and returned to the Instructor at the specified time in order for the final grade to be submitted. DO NOT LEAVE THE ROOM WITH OR COPY THE EXAMS IN ANY MANNER (photocopying, photographing, scanning, typing, etc are all strictly forbidden)!

Exams will be a mixture of multiple choice, matching, fill-in the blank, short answer, labeling, calculations and essay questions. Some will require analysis and interpretation of data or experimental design to assess critical thinking skills. Some questions will be derived from laboratory activities. The Final Exam (Wednesday, May 14 from 8:00 - 10:30 AM) will contain new material from the end of the semester.

Attendance at class is required and expected. Quizzes may be given at any time in class. There will be no makeups. Homeworks and other assignments may be given in class. The other assignments may include data interpretation, experimental design, calculations, opinion papers, research article summaries, etc. They will generally be due at the start of lecture class the following week. You are encouraged to get together and work on them as a group. However, unless specified otherwise, the assignments must be turned in individually and be written in your own words, NOT COPIED. An assignment grade of ZERO will be given if the work is not in your own words.

Required Readings

Textbook: Botany: An Introduction to Plant Biology, 5th Ed. by Mauseth (2014) Jones and Bartlett Learning, Burlington, MA
ISBN 0978-1-4496-6580-7

ISBN 978-1-284-04106-4
BlackBoard:  (http://bb9.tamucc.edu) Course-associated site for messaging, quizzes, posting PPT notes, supplementary materials and readings, video-recordings, links to resources, labs, data, announcements, etc. You MUST use this and get your access figured out ASAP! Call the IT Help desk for assistance: (361) 825-2692 (local); (866) 353-2491 (toll free); email: computer.helpline@tamucc.edu; internet: Submit a Ticket
TUTORIALS: Island Online: https://iol.tamucc.edu/  ; IT website: http://it.tamucc.edu/

If you haven't already prepared your computer for Blackboard, access Blackboard Technical Requirements and follow the directions.

Course Listserv: All students must subscribe to the class listserv, using your official University-mandated email account (firstinitiallastname@islander.tamucc.edu). You may ask questions of interest to the instructor or other students on the class listserv, eg. clarification of an assignment, as well as receive important class announcements. You are encouraged to subscribe to the Opportunities Listserv as well.

To subscribe, send an e-mail to “Botany-list-request@sci.tamucc.edu”. Make sure that your e-mail address appears in the “From:” heading, and that the word “subscribe” is typed in the subject line. You will receive a subscription acknowledgement confirming that you have done everything correctly. To post messages to the listserv, send to “Botany-list@sci.tamucc.edu”. Because of security concerns, you should post messages from the official TAMUCC computer account (Islander) that is used to subscribe to the listserv. At the end of class, please send an e-mail to “Botany-list-request@sci.tamucc.edu” with “unsubscribe” in the subject heading. Please use this service to ask questions about class materials, dates, assignments, etc.

You should also subscribe to the Opportunities Listserv using the same procedure: “opportunities-list-request@sci.tamucc.edu”. This service provides notification of scholarships, research and volunteer opportunities and science-related job opportunities.

Recommended or Supplemental Reading: Supplemental readings will be posted on the Blackboard course site.

Text-Associated Website: The textbook has a free companion website with study-aids, animations & videos, essays, and links to additional materials: http://biology.jbpub.com/botany/5e

List of Supplies
You will need a laboratory notebook, “sharpie”, calculator, laboratory coat, and safety glasses. Field trips will require appropriate clothing, shoes and hats. Sunscreen is highly recommended.

Course Policies
ALL E-MAIL COMMUNICATIONS WITH THE INSTRUCTOR OR LAB TA MUST BE MADE THROUGH YOUR OFFICIAL UNIVERSITY E-MAIL (@ISLANDER), BY UNIVERSITY RULE.

Attendance/tardiness, Late work and Make-up Exams You are expected to attend all classes and labs in a timely manner. Important new material, as well as schedule changes and quizzes may occur at any time. It is expected that you will take notes, ask/answer questions, and participate in group activities.

LATE WORK will not be accepted, except as below, or unless otherwise specified. Attendance is the student’s responsibility. You are responsible for the material covered in every lecture, even if it is not in the book, regardless of your attendance. Nothing missed during an unexcused absence can be made up. An excused absence allows us to make alternative arrangements to complete an assignment. Only unavoidable absences are excused. Routine events (holiday travel, non-emergency medical visits, parent-
teacher conferences, household or auto repairs should be scheduled to avoid conflicts with class. An acceptable excuse must be:

• from an appropriate source (doctor, dentist, funeral director) stating the nature of the event
• In writing, on official letterhead, and signed (it will not be returned)
• presented prior to, or within 1 week of, the absence. [If something happens (eg a car accident) you are expected to use all means to contact the instructor ASAP if an excuse is expected – use email, phone and pony express !]
• It must state the dates for which the excuse applies

There are No make-up examinations: For some scheduled events, you may arrange to take a lecture exam before, but not after, its scheduled time. Quizzes cannot be made-up.

Expectations: You are responsible for your own education. Take notes in class as some new information may be presented. Lecture notes from the instructor, when made available, do not represent everything you need to know. Read the book and handouts for further detail not covered in class, and to be prepared for laboratory. If you don’t understand, then please ask, or see the instructor after class. Don’t allow yourself to fall behind. Be diligent and thorough on written assignments and examination answers. If you are not sure of an answer, at least try. For many people, putting anything down on paper clarifies their thinking and helps with recall. Also:

  Be aware of university-imposed deadlines (ie drop dates)
*  Be aware of test times and dates, including changes which may be announced in class
*  Check your exams for clerical errors. The test score is not the end of the learning process. Review tests to determine why you missed an answer. Correcting your mistakes is an effective way to learn material (reflective learning).
*  Work on all assigned homework problems in a timely manner. Seek tutorial help from classmates or the course/laboratory Instructors.
*  Keep track of your progress in class.

The following procedures will be enforced:

*  All major exams are the property of the instructor and may not be removed from class, copied, reproduced or photographed in any way
*  You must be prepared to present a photo ID at all examinations
*  If you leave an examination room–for any reason–you must hand in your test and you will not be allowed to resume the examination. Attend to personal matters (e.g., rest room visits) before the examination.

Cell Phone/Electronic Device Usage Policy on Disruptive Behavior:
As adult university students, you are expected to act with courtesy and common sense. Disruptive, disrespectful, or abusive language/behavior towards anyone in class (student, staff, faculty) will not be tolerated and could result in permanent removal from class. This includes tardiness to class, talking in class, insubordination, and electronic disturbances (cell phones, ipods, etc). Turn it off. Hazardous materials are used in the laboratory so “play” or reckless behavior will not be allowed. Children are not allowed in class or lab.

Academic Integrity/Plagiarism.
University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in appropriate action at the discretion of the instructor, including failure of the course. Everything should be in your own words.
Dropping a Class
I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with me before you decide to drop to be sure it is the best thing to do. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Learn the last day to drop a class with an automatic grade of “W” this term.

Preferred methods of scholarly citations  (Format from J. Experimental Marine Biology and Ecology)

Grade Appeals*
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 on 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 on the process, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, consult Texas A&M University-Corpus Christi University Procedure 13.02.99.C2.01 Student Grade Appeal Procedures (http://www.tamucc.edu/provost/university_rules/index.html), and the College of Science and Engineering Grade Appeals webpage (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 or the College of Science and Engineering Dean’s Office.

Disabilities Accommodations*
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 or visit Disability Services at (361) 825-5816 in Driftwood 101.

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.
Tentative Syllabus
(course schedule)

Wk1: Jan
Syllabus, Course overview, Introduction to plants and botany; Diversity of adaptations
(Ch 1); Plant cells and structures (Ch 3)
Lab: Introduction, paperwork, plant (slow) seeds

Wk 2: Jan
Plant cells and structures (Ch 3); Seeds and seedlings (Ch 9: pp 214-215; Supplement)
Growth and cell division (Ch 4)
Lab: Plant (fast) seeds, Plant Propagation (Rooting), Plant propagation video/clips,
Plant body, seeds & seedling structure

Wk 3: Feb
Plant tissues and primary stems: structures and functions (Ch 5)
Lab: Plant cell types, tissues and primary stems; Plant Propagation (Grafting)

Wk 4: Feb
Leaves: structure, morphology & function (Ch 6)
Lab: Leaves

Wk 5: Feb
Root structure & function (Ch 7);
EXAM I Friday (Chapts 1, 3, 4, 5, 6, (9))
Lab: Roots

Wk 6: Feb
Woody plant structures and function (Ch 8)
Lab: Wood, woody plants

Wk 7: Mar
Flowers and reproduction (Ch 9)
Lab: Flower structure and function

Mar
Spring Break

Wk 8: Feb
Development and morphogenesis (Ch 14)
Lab: Fruits

Wk 9: Mar
Recombinant DNA/Biotechnology (Ch 15: pp 373-383);
Classification & systematics (Ch 18)
EXAM II Friday (Chapts 7, 8, 9, 14)
Lab: Development, morphogenesis, hormones

Wk 10: Mar ; Apr
Algae (Ch 19); Bryophytes (Ch 20)
Lab: Field Trip: Botanical Gardens; Collect plant tissue

Wk 11: Apr
Seedless vascular plants (Ch 21)
Lab: Algae; Bryophytes; DNA preps, PCR

Wk 12: Apr
Gymnosperms (Ch 22)
Lab: Seedless vascular plants; Gymnosperms; Visit Herbarium

Wk 13: Apr
Angiosperms (Ch 23)
Lab: Field Trip: Coastal ??
Wk 14: May

Plants & Society; Agriculture; Biotechnology

**Lab:** Bioinformatics: Analysis of DNA Barcoding

Wk 15: May

Current Topics in Plant Biology

Wk 16: Wed May

FINAL EXAM III (Chapts: (15), 18 – 23) 8:00-10:30 AM

Laboratory TA: MaCaulay White

Office Location: CS 240
Office Hrs: mwhite11@islander.tamucc.edu

Other access to greenhouse: Fridays 11:00 – 12:00 OR See _______/Contact TA