

CRN 10747 - Botany BIOL 3430 - 110
Spring 2022
Texas A&M University-Central Texas

COURSE DATES, MODALITY, AND LOCATION

Course dates: January 19th- May 13th
Warrior Hall, Rm 407 (lecture), Rm 407 (lab)
1:00-2:15 (lecture), Monday and Wednesday; 9:30-12:30 (lab) Wednesday

This course uses the A&M-Central Texas Canvas Learning Management System [<https://tamuct.instructure.com>].
Online class participation requires a computer meeting the minimum computing requirements, plus web camera, speaker, and microphone (or headset). Proctorio also requires the Chrome web browser with their custom plug in.

In the event class/laboratory is forced to go online:
Lecture - conducted via WebEx synchronously with scheduled class times
Laboratory - simulations of labs and lab results will be presented on-line and used as the basis for lab reports and assignments.

INSTRUCTOR AND CONTACT INFORMATION

Instructor: Mr. Dalton Cross
Office: 419 Warrior Hall
Phone: 254-479-7855
Email: dalton.cross@tamuct.edu

Office Hours:

I am available by appointment. As an adjunct instructor I will not be maintaining office hours but will be more than glad to set up visits either before or after class. I encourage you to either call or e-mail me so we can find a time that is mutually convenient.

Student-instructor interaction

I will be more than glad to set up visits either before or after class. I encourage you to either call, text or e-mail with questions or concerns or confer with me to find a time that is mutually convenient to meet face to face. I will check email several times daily and attempt to respond as urgently as possible.

Emergency Warning System for Texas A&M University-Central Texas

SAFEZONE. SafeZone provides a public safety application that gives you the ability to call for help with the push of a button. It also provides Texas A&M University-Central Texas the ability to communicate emergency information quickly via push notifications, email, and text messages. All students automatically receive email and text messages via their myCT accounts.

Downloading SafeZone allows access to push notifications and enables you to connect directly for help through the app.

You can download SafeZone from the app store and use your myCT credentials to log in. If you would like more information, you can visit the SafeZone website [www.safezoneapp.com].

To register SafeZone on your phone, please follow these 3 easy steps:

Download the SafeZone App from your phone store using the link below:

iPhone/iPad: [<https://apps.apple.com/app/safezone/id533054756>]

Android Phone / Tablet [[https://play.google.com/store/apps/details?](https://play.google.com/store/apps/details?id=com.criticalarc.safezoneapp)

[id=com.criticalarc.safezoneapp](https://play.google.com/store/apps/details?id=com.criticalarc.safezoneapp)]

Launch the app and enter your myCT email address (e.g. {name}@tamuct.edu)

Complete your profile and accept the terms of service

COURSE INFORMATION

Course Overview and description:

An in-depth examination of the internal organization of plants, particularly angiosperms, with an emphasis on understanding anatomy from a structure-function standpoint. Three hours of lecture and three hours of laboratory each week.

Prerequisite : BIOL 1407

Student Learning Outcomes:

Students will:

- A. understand the study of plants from both a historical and modern day perspective
- B. identify aspects of botany which each of the major botanical disciplines is concerned
- C. Connect the features of plant organs and cellular structures to their applications and uses by people
- D. Observe plants as dynamic organisms that respond in various structural ways to their environment
- E. Compare and contrast the variety of reproductive strategies and life cycles seen in plants and plant related species
- F. Summarize and evaluate recently published botanical research
- G. Relate the study of plants to common species observed in the Central Texas region

Required Reading and Textbook(s):

- A. STERN'S INTRODUCTORY PLANT BIOLOGY. FIFTEENTH EDITION Published by McGraw-Hill Education, 2 Penn Plaza, New York, NY 10121. Copyright © 2021 by McGraw-Hill Education. All rights reserved. Printed in the United States of America. Previous editions © 2018, 2014, and 2011. 1 2 3 45 6 7 8 9 LWI 24 23 22 21 20, ISBN

978-1-260-24083-2 (bound edition), MHID 1-260-24083-5 (bound edition), ISBN 978-1-260-48862-3 (loose-leaf edition), MHID 1-260-48862-4 (loose-leaf edition)
B. Stern's Introductory Plant Biology Lab Manual, 15th Edition by James Bidlack, (ISBN: 9781260488630/MHID: 1260488632)

I expect you to read the corresponding chapters in your textbook before coming to class.

You will be tested on all of the chapters listed below and held responsible for knowing the materials contained within them. As college students, I expect you to be able to parse out key concepts and vocabulary without every detail being covered in lecture.

COURSE REQUIREMENTS

Course Requirements:

- 35% Three lecture exams
Exam 1- SLOs will include A,B,C,
Exam II- SLOs will include C,D,E,F
Exam III- SLOs will include A,B,C,D,E,F,G
- 20% Comprehensive final exam
SLOs will include A-G
- 10% Journal
SLOs will include F,G
- 10% Laboratory reports- rubric is at the end of this syllabus
- 20% Laboratory assignments - includes Lab Practical Exams and 2 Special projects (rubric is at the end of this syllabus)
- 5% Participation—includes attendance, discussion, participation

Mandatory Laboratory Safety Training:

- All students are **required** to take the mandatory Laboratory Safety Training Module - found on in your [Modules tab](#) in CANVAS.
 - You must take the training and bring the signed "Safety Agreement Form" to your instructor before you are allowed in lab!!!
- * This is **YOUR RESPONSIBILITY** - any lab absences because you have not taken the training will be considered **unexcused!**

Grading Criteria Rubric and Conversion

A 4.00 (90 +) Achievement that is outstanding relative to the level necessary to meet course requirements.

B 3.00 (80-89%) Achievement that is significantly above the level necessary to meet course requirements.

C 2.00 (70-79%) Achievement that meets the course requirements in every respect.

D 1.00 (60-69%) Achievement that is worthy of credit even though it fails to meet fully course requirements.

F 0.00 (<60%) Represents failure and signifies that the work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not completed and there was no agreement between the instructor and the student that the student

would be awarded an “I” (incomplete).

I (Incomplete) The “I” shall be assigned at the discretion of the instructor when, due to extraordinary circumstances, the student was prevented from completing the work of the course on time. The assignment of an “I” requires a written agreement between the instructor and student specifying the time and manner in which the student will complete the course requirements. In no event may any such written agreement allow a period of longer than one year to complete the course requirements. For graduate and professional students, an “I” is to remain on the transcript until changed by the instructor or department. For all other students, work to make up an I must be submitted within one year of the last day of final examinations of the term in which the “I” was given; if not submitted by that time, then the “I” will automatically change to an F. To obtain an incomplete you must have been doing passing work in the course

Posting of Grades:

Grades will be posted under the student’s individual log on to Canvas as quickly as possible. There will be no public posting of grades.

COURSE OUTLINE AND CALENDAR

Complete Course Calendar:

1. Week of January 18
 - a. Lecture Topic: Plant Biology and Nature of Life
 - i. Chapters 1 and 2
 - b. Laboratory: Scientific Method/Microscopy
2. Week of January 24
 - a. Lecture Topic: Cells and Tissues
 - i. Chapters 3 and 4
 - b. Laboratory: #10, Photosynthesis
3. Week of January 31
 - a. Lecture Topic: Plant Metabolism
 - i. Chapter 10
 - b. Laboratory: #4, Roots
4. Week of February 7

- a. Lecture Topic: Water in Plants
 - i. Chapter 9
- b. Laboratory: #5, Stems
- 5. Week of February 15
 - a. Lecture Topic: Roots and Soils, **EXAM I (chapters 1-4,9,10)**
 - i. Chapter 5
 - b. Laboratory: #6, Leaves
- 6. Week of February 21
 - a. Lecture Topic: Stems and Leaves
 - i. Chapters 6 and 7
 - b. Laboratory: **Practical Exam 1**
- 7. Week of February 28
 - a. Lecture Topic: Growth and Development, Meiosis/Alternation of Generations
 - i. Chapters 11 and 12
 - b. Laboratory: #3 and 12: Mitosis and Meiosis
- 8. Week of March 7
 - a. Lecture Topic: Evolution and Classification
 - i. Chapter 15
 - b. Laboratory: #14, Domains Archaea and Bacteria; Kingdom Protista
- 9. Week of March 14
 - a. Spring Break - No Class or Lab
- 10. Week of March 21
 - a. Lecture Topic: Plant Names and Classifications, **EXAM II (Chapters 5-7,11,12,15)**

- i. Chapter 16
 - b. Laboratory: #15, Kingdom Fungi (Mycota)
- 11. Week of March 28
 - a. Lecture Topic: Bacteria, Archaea and Viruses, Kingdom Protista
 - i. Chapter 17 -18
 - b. Laboratory: #11, Water in Plants, Respiration; Digestion
- 12. Week of April 4
 - a. Lecture Topic: Kingdom Fungi
 - i. Chapter 19
 - b. Laboratory: #16, Bryophytes and Ferns
- 13. Week of April 11
 - a. Lecture Topic: Bryophytes, Ferns and their Relatives, **EXAM III (Chapters 16-19)**
 - i. Chapters 20 and 21
 - b. Laboratory: #17, Gymnosperms
- 14. Week of April 18
 - a. Lecture Topic: **Gymnosperms**
 - i. Chapter 22
 - b. Laboratory: #18 and 19, Angiosperms, fruits, spices and survival
- 15. Week of April 25
 - a. Lecture Topic: Angiosperms
 - i. Chapter 8
 - b. Laboratory: **Practical Exam 2**
- 16. Week of May 3

a. Lecture Topic: Angiosperms, Flowering Plants and Civilization

i. Chapters 23 and 24

b. Assignment: **Plant Journal Due May 5**

16. Week of May 10

a. **Comprehensive Final Exam**

Important University Dates

January 17, 2022	Martin Luther King, Jr Day (University Closed)
January 18, 2022	Add, Drop and Late Registration Begins for 16- and First 8-Week Classes \$25 Fee assessed for late registrants
January 18, 2022	Classes Begin for Spring Semester
January 20, 2022	Deadline for Add, Drop, and Late Registration for 16- and First 8-Week Classes
January 25, 2022	Deadline to Drop First 8-Week Classes with No Record
February 1, 2022	Deadline for Teacher Education Program Applications
February 2, 2022	Deadline to Drop 16-Week Classes with No Record
February 25, 2022	Deadline to Drop First 8-Week Classes with a Quit (Q) or Withdraw (W)
March 11, 2022	Classes end for 1st 8-Weeks Session
March 15, 2022	Deadline for Clinical Teaching/Practicum Applications
March 15, 2022	Deadline for Faculty Submission of First 8-Week Final Class Grades (due by 3pm)
March 14-18, 2022	Spring Break (No Classes - Administrative Offices Open)
March 21, 2022	Class Schedule Published for Summer Semester
March 21, 2022	Add, Drop, and Late Registration Begins for Second 8-Week Classes \$25 Fee assessed for late registrants
March 21, 2022	Classes Begin for Second 8-Week Session
March 23, 2022	Deadline for Add, Drop, and Late Registration for Second 8-Week Classes

March 25, 2022	Deadline for Spring Graduation Application for Ceremony Participation
March 28, 2022	Deadline to Drop Second 8-Week Classes with No Record
April 1, 2022	Deadline for GRE/GMAT Scores to Graduate School Office
April 1, 2022	Deadline for School Counselor Program Applications
April 4, 2022	Registration Opens for Summer Semester
April 8, 2022	Deadline to Drop 16-Week Classes with a Quit (Q) or Withdraw (W)
April 16, 2022	Deadline for Final Committee-Edited Theses with Committee Approval Signatures for Spring Semester to Graduate School Office
April 29, 2022	Deadline to drop Second 8-week Classes with a Quit (Q) or Withdraw (W).
May 13, 2022	Deadline to Withdraw from the University for 16- and Second 8-Week Classes
May 13, 2022	Spring Semester Ends
May 13, 2022	Deadline for Applications for Tuition Rebate for Spring Graduation (5pm)
May 13, 2022	Deadline for Spring Degree Conferral Applications to the Registrar's Office. \$20 Late Application Fee.

TECHNOLOGY REQUIREMENTS AND SUPPORT

Technology Requirements

This course will use the A&M-Central Texas Instructure Canvas learning management system. We strongly recommend the latest versions of Chrome or Firefox browsers. Canvas no longer supports any version of Internet Explorer.

Logon to A&M-Central Texas Canvas [<https://tamuct.instructure.com/>] or access Canvas through the TAMUCT Online link in myCT [<https://tamuct.onecampus.com/>]. You will log in through our Microsoft portal.

Username: Your MyCT email address. Password: Your MyCT password

Canvas Support

Use the Canvas Help link, located at the bottom of the left-hand menu, for issues with Canvas. You can select "Chat with Canvas Support," submit a support request through "Report a Problem," or call the Canvas support line: 1-844-757-0953.

For issues related to course content and requirements, contact your instructor.

Online Proctored Testing

A&M-Central Texas uses Proctorio for online identity verification and proctored testing. This service is provided at no direct cost to students. If the course requires identity verification or proctored testing, the technology requirements are: Any computer meeting the minimum computing requirements, plus web camera, speaker, and microphone (or headset). Proctorio also requires the Chrome web browser with their custom plug in.

Other Technology Support

For log-in problems, students should contact Help Desk Central
24 hours a day, 7 days a week

Email: helpdesk@tamu.edu

Phone: (254) 519-5466

[Web Chat](http://hdc.tamu.edu): [<http://hdc.tamu.edu>]

Please let the support technician know you are an A&M-Central Texas student.

UNIVERSITY RESOURCES, PROCEDURES, AND GUIDELINES

Drop Policy

If you discover that you need to drop this class, you must complete the Drop Request Dynamic Form through Warrior Web.

[<https://dynamicforms.ngwebsolutions.com/casAuthentication.ashx?InstID=eaed95b9-f2be-45f3-a37d-46928168bc10&targetUrl=https%3A%2F%2Fdynamicforms.ngwebsolutions.com%2FSubmit%2FForm%2FStart%2F53b8369e-0502-4f36-be43-f02a4202f612>].

Faculty cannot drop students; this is always the responsibility of the student. The Registrar's Office will provide a deadline on the Academic Calendar for which the form must be completed. Once you submit the completed form to the Registrar's Office, you must go into Warrior Web and confirm that you are no longer enrolled. If you still show as enrolled, FOLLOW-UP with the Registrar's Office immediately. You are to attend class until the procedure is complete to avoid penalty for absence. Should you miss the drop deadline or fail to follow the procedure, you will receive an F in the course, which may affect your financial aid and/or VA educational benefits.

Academic Integrity

Texas A&M University -Central Texas values the integrity of the academic enterprise and strives for the highest standards of academic conduct. A&M-Central Texas expects its students, faculty, and staff to support the adherence to high standards of personal and scholarly conduct to preserve the honor and integrity of the creative community. Academic integrity is defined as a commitment to honesty, trust, fairness, respect, and responsibility. Any deviation by students from this expectation may result in a failing grade for the assignment and potentially a failing grade for the course. Academic misconduct is any act that improperly affects a true and honest evaluation

of a student's academic performance and includes, but is not limited to, working with others in an unauthorized manner, cheating on an examination or other academic work, plagiarism and improper citation of sources, using another student's work, collusion, and the abuse of resource materials. All academic misconduct concerns will be referred to the university's Office of Student Conduct. Ignorance of the university's standards and expectations is never an excuse to act with a lack of integrity. When in doubt on collaboration, citation, or any issue, please contact your instructor before taking a course of action.

For more [information regarding the Student Conduct process](https://www.tamuct.edu/student-affairs/student-conduct.html), [<https://www.tamuct.edu/student-affairs/student-conduct.html>].

If you know of potential honor violations by other students, you may [submit a report](https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=0), [https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=0].

Academic Accommodations

At Texas A&M University-Central Texas, we value an inclusive learning environment where every student has an equal chance to succeed and has the right to a barrier-free education. The Office of Access and Inclusion is responsible for ensuring that students with a disability receive equal access to the university's programs, services and activities. If you believe you have a disability requiring reasonable accommodations please contact the Office of Access and Inclusion, WH-212; or call (254) 501-5836. Any information you provide is private and confidential and will be treated as such.

For more information please visit our Access & Inclusion Canvas page (log-in required) [<https://tamuct.instructure.com/courses/717>]

Important information for Pregnant and/or Parenting Students

Texas A&M University-Central Texas supports students who are pregnant and/or parenting. In accordance with requirements of Title IX and related guidance from US Department of Education's Office of Civil Rights, the Dean of Student Affairs' Office can assist students who are pregnant and/or parenting in seeking accommodations related to pregnancy and/or parenting. Students should seek out assistance as early in the pregnancy as possible. For more information, please visit Student Affairs [<https://www.tamuct.edu/student-affairs/index.html>]. Students may also contact the institution's Title IX Coordinator. If you would like to read more about these requirements and guidelines online, please visit the website [<http://www2.ed.gov/about/offices/list/ocr/docs/pregnancy.pdf>].

Title IX of the Education Amendments Act of 1972 prohibits discrimination on the basis of sex and gender-including pregnancy, parenting, and all related conditions. A&M-Central Texas is able to provide flexible and individualized reasonable accommodation to pregnant and parenting students. All pregnant and parenting students should contact the Associate Dean in the Division of Student Affairs at (254) 501-5909 to seek out assistance. Students may also contact the University's Title IX Coordinator.

Tutoring

Tutoring is available to all A&M-Central Texas students, both virtually and in-person. Student success coaching is available online upon request.

If you have a question, are interested in becoming a tutor, or in need of success coaching contact the Warrior Center for Student Success, Equity and Inclusion at (254) 501-5836, visit the Warrior Center at 212 Warrior Hall, or by emailing WarriorCenter@tamuct.edu.

To schedule tutoring sessions and view tutor availability, please visit Tutor Matching Services [<https://tutormatchingservice.com/TAMUCT>] or visit the Tutoring Center in 111 Warrior Hall.

Chat live with a remote tutor 24/7 for almost any subject from on your computer! Tutor.com is an online tutoring platform that enables A&M-Central Texas students to log in and receive online tutoring support at no additional cost. This tool provides tutoring in over 40 subject areas except writing support. Access Tutor.com through Canvas.

University Writing Center

University Writing Center: Located in Warrior Hall 416, the University Writing Center (UWC) at Texas A&M University-Central Texas (A&M-Central Texas) is a free service open to all A&M-Central Texas students. For the Spring 2022 semester, the hours of operation are from 10:00 a.m.-5:00 p.m. Monday thru Thursday in Warrior Hall 416 (with online tutoring available every hour as well) with satellite hours available online only Monday thru Thursday from 6:00-9:00 p.m. and Saturday 12:00-3:00 p.m.

Tutors are prepared to help writers of all levels and abilities at any stage of the writing process. While tutors will not write, edit, or grade papers, they will assist students in developing more effective composing practices. By providing a practice audience for students' ideas and writing, our tutors highlight the ways in which they read and interpret students' texts, offering guidance and support throughout the various stages of the writing process. In addition, students may work independently in the UWC by checking out a laptop that runs the Microsoft Office suite and connects to WIFI, or by consulting our resources on writing, including all of the relevant style guides. Whether you need help brainstorming ideas, organizing an essay, proofreading, understanding proper citation practices, or just want a quiet place to work, the UWC is here to help!

Students may arrange a one-to-one session with a trained and experienced writing tutor by making an appointment via WOnline [<https://tamuct.mywconline.com/>]. In addition, you can email Dr. Bruce Bowles Jr. at bruce.bowles@tamuct.edu if you have any questions about the UWC, need any assistance with scheduling, or would like to schedule a recurring appointment with your favorite tutor by making an appointment via WOnline [<https://tamuct.mywconline.com/>]. In addition, you can email Dr. Bruce Bowles Jr. at bruce.bowles@tamuct.edu if you have any questions about the UWC, need any assistance with scheduling, or would like to schedule a recurring

appointment with your favorite tutor.

University Library

The University Library provides many services in support of research across campus and at a distance. We offer over 200 electronic databases containing approximately 400,000 eBooks and 82,000 journals, in addition to the 96,000 items in our print collection, which can be mailed to students who live more than 50 miles from campus. Research guides for each subject taught at A&M-Central Texas are available through our website to help students navigate these resources. On campus, the library offers technology including cameras, laptops, microphones, webcams, and digital sound recorders.

Research assistance from a librarian is also available 24 hours a day through our online chat service, and at the reference desk when the library is open. Research sessions can be scheduled for more comprehensive assistance, and may take place virtually through WebEx, Microsoft Teams or in-person at the library. Schedule an appointment here [<https://tamuct.libcal.com/appointments/?g=6956>]. Assistance may cover many topics, including how to find articles in peer-reviewed journals, how to cite resources, and how to piece together research for written assignments.

Our 27,000-square-foot facility on the A&M-Central Texas main campus includes student lounges, private study rooms, group work spaces, computer labs, family areas suitable for all ages, and many other features. Services such as interlibrary loan, TexShare, binding, and laminating are available. The library frequently offers workshops, tours, readings, and other events. For more information, please visit our Library website [<http://tamuct.libguides.com/index>].

OPTIONAL POLICY STATEMENTS

A Note about Sexual Violence at A&M-Central Texas

Sexual violence is a serious safety, social justice, and public health issue. The university offers support for anyone struggling with these issues. University faculty are mandated reporters, so if someone discloses that they were sexually assaulted (or a victim of Domestic/Dating Violence or Stalking) while a student at TAMUCT, faculty members are required to inform the Title IX Office. If you want to discuss any of these issues confidentially, you can do so through Student Wellness and Counseling (254-501-5955) located on the second floor of Warrior Hall (207L).

Sexual violence can occur on our campus because predators often feel emboldened, and victims often feel silenced or shamed. It is incumbent on ALL of us to find ways to actively create environments that tell predators we don't agree with their behaviors and tell survivors we will support them. Your actions matter. Don't be a bystander; be an agent of change. For additional information on campus policy and resources visit the Title IX webpage [<https://www.tamuct.edu/compliance/titleix.html>].

Behavioral Intervention

Texas A&M University-Central Texas cares about the safety, health, and well-being of its students, faculty, staff, and community. If you are aware of individuals for whom you have a concern, please make a referral to the Behavioral Intervention Team. Referring your concern shows you care. You can complete the referral online [https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=2].

Anonymous referrals are accepted. Please see the Behavioral Intervention Team website for more information [<https://www.tamuct.edu/bit>]. If a person's behavior poses an imminent threat to you or another, contact 911 or A&M-Central Texas University Police at 254-501-5805.

INSTRUCTOR POLICIES

Read these carefully as I am strict with my policies.

Grading Policy and Point Breakdown

Grades in this course will be criteria-based on a number of activities including exams, discussion, and projects. This means that grades will not be curved and anyone achieving a 90% or above will receive an A in this course.

Grade Dispute Policy

Grading disputes must be put in writing (with justification such as supporting statements from the text or another credible source) and given to me no earlier than 24 hours after the assignment has been returned. I will consider your request carefully, but reserve the right to adjust your grade up or down.

Labs

Students are required to purchase a laboratory coat from the TAMUCT Hanik Bookstore in Founder's Hall. Students must keep their laboratory coat in the laboratory room (you will be provided a storage bag); you cannot transport coats from lab to lab or bring outside the laboratory. This is to be a disposable lab coat. Lab coats must remain in the laboratory for the duration of the semester. Shoes must not be open toed and be non-permeable to liquids. Long pants must be worn under the coat with socks or high top shoes that do not expose any bare skin of the ankles and calves. The weekly lab points will consist of 2 items; a lab quiz and a written lab report or completion of the exercises in your laboratory manual. The lab quiz will be based on the current week's laboratory exercise to be sure that you have read your lab book before coming to lab. Quizzes will be either be distributed at the beginning of class or posted online in Canvas on the Monday before the lab and taken down Thursday morning prior to the lab. To be fair to the students who arrive to lab on time, if you arrive after an in class quiz has been distributed, you miss the quiz. No exceptions regardless of excuse. If the quiz is online you must complete it prior to it be taken down from Canvas on the morning of the lab. A maximum of 3 absences will be allowed; additional absences in lab will result in an "F" for the entire course, regardless of excuse. See lab report rubric at end of the syllabus.

Assignments.

These will be varied in nature, but will consist of activities that cause the students to reflect upon the state of knowledge of the topic of the week, how that topic is perceived in the media, and/or analysis of specific research projects relevant to the subject. All assignments are to be turned in, on time (i.e. by posted time on the due date), to the Canvas website. I will distribute instructions on how to do this. I will not accept e-mailed assignments of any kind.

Late Assignments

I expect all assignments to be turned in on time. Late assignments interfere with my ability to provide timely, detailed feedback, as well as with your ability to learn and process new material. Accordingly, any unauthorized late assignment will receive a 5% reduction in grade for each day it is late up to 3 days and then a 10% reduction. No assignments will be accepted after it has been graded and returned.

Exams

The exams will be a mixture of matching, multiple choice and short answer, designed to provoke reflection, critical thought, and application of knowledge. You will receive a list of several sample or real exam questions ahead of time. You are encouraged to prepare for the exam by reviewing reading materials, outlining a draft of a response, and discussing these thoughts with your peers. You will then demonstrate your individual, integrated thoughts on the topic in a closed-book exam during the class period.

Missed exams

If you know you will miss an exam, please contact me BEFORE the exam. I will gladly give make-up exams if the student has an unavoidable reason for missing the exam (i.e. death in the family, severe illness). Keep in mind that I will expect documentation of your reason for missing the exam (e.g. doctor's note, obituary notice). Exams must be made up within a week of the original scheduled date, no exceptions regardless of excuse. Exams may have to be made up by arrangement with the TAMUCT Testing Center. I will provide them the exam and any instructions

What I expect of you

To get the most out of this class, you are expected to conduct yourself in a professional manner, which includes contributing to class discussions, being punctual, and notifying me of absences in advance.

Class Attendance

I expect that you attend each class session and arrive on time. If an unavoidable situation arises that prevents you from attending class, I expect that you also promptly contact me to discuss the missed material and get the notes from a classmate. I will not distribute my notes to students as they are often abbreviated and do not contain the detail needed to sufficiently understand the material. Roll will be taken for lecture and laboratory sessions.

What you can expect of me

You can expect me to start and end class on time, be available through office hours, e-mail, and by appointment, be responsive to student suggestions for course improvement, answer questions to the fullest extent possible and/or direct you to appropriate resources, return graded assignments and exams within a reasonable time frame, and treat you with respect as future colleagues.

Discussion

The topics in this class encompass a diversity of issues that merit in-depth thought and discussion. Since individuals will be expressing their opinions, I expect that will you respect others' contributions, as you would want them to do for you.

Credits and Workload expectations

For undergraduate courses, one credit is defined as equivalent to an average of two hours of learning effort per week (over a full semester) necessary for an average student to receive an average grade for the course. A student taking a four-credit class that meets for four hours a week should expect to spend an additional eight hours a week outside the classroom in order to earn an average grade.

Class Structure

Classes will involve a balance of active lecture and engaging learning activities. I believe that students learn the theories and concepts much better when they have an active role. I know that this may be new to some of you, but please keep an open mind and I know that you will get more out of this class because of it.

Copyright Notice

Students should assume that all course material is copyrighted by the respective author(s). Reproduction of course material is prohibited without consent by the author and/or course instructor. Violation of copyright is against the law and Texas A&M University-Central Texas' Code of Academic Honesty. All alleged violations will be reported to the Office of Student Conduct.

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(dalton.cross@tamuct.edu)

NOTE! The following *Science policies* are now in effect:

1. There will be no bathroom breaks allowed during any exam. Be sure that you address this issue before beginning an exam.
2. All electronics are to be turned off and removed from the exam area (including watches, air pods, phones, etc...).
3. Any student needing to take an exam at a different time as rest of students due to sickness or other accommodations will receive a different version of exam. This includes sickness, special accommodations, etc.....

4. All students needing special accommodations must submit an accommodation form from the Office of Access and Inclusion listing the specific accommodations needed. Students are responsible for scheduling their own exam times with the TAMUCT Testing Center.
5. Any student missing an exam in class for any other reason (i.e. illness, death in family, etc....) must provide documentation for missing the exam (e.g. doctor's note, obituary notice, etc....). Exams must be made up within one week of original scheduled date, no exceptions.
6. Any online exams must use a proctoring service (e.g. Proctorio)

How to write up a laboratory report

The general format for a scientific paper will be used in this course. Scientific papers have an introduction, materials and methods, results, discussion and literature cited. Keep in mind that scientists often pay for a paper to be peer-reviewed and published (not the other way around). Peer-review means that all articles are read by other scientists (peers) who make editorial suggestions and ultimately decide whether a paper contains sound research and should be published. Publishing is essential for graduate students and faculty, but costly at \$50-200 per page, thus it is important to write concisely.

The Abstract section:

Should be a brief summary of your entire paper. Use a little from each section to make a clear, cohesive summary. Readers will decide from your abstract whether or not they will continue to read your entire research paper. Limit to 200 words.

The Introduction section:

This section is as short as a few paragraphs or as long as a few pages. It serves to introduce your experiment. Start with general statements and become more specific. The first part of the introduction should set the context for your experiment by briefly providing background information. You should provide background and context, present what information is known from previous studies, and then state what additional information your experiment may provide. Be sure to give proper citations when you state facts or ideas from outside sources (see Literature Cited section).

In the second part of the introduction, you should describe the specific questions you chose to study. State what you did in a general way, e.g., "We investigated the effect of obesity on heart rate by comparing heart rates of fat and thin people after they climbed stairs", but do not give away the specific details of your Methods or Results. Specifically, state your hypothesis at the end of the Introduction.

The Materials and Methods section:

The experiment has been completed by the time you write your report, so use past tense. This section includes a brief outline of the methods used in the experiments. The purpose of this section is to allow other experimenters to duplicate the methods you used, so it should be detailed enough so that someone else could read your report

and repeat the experiment. However, you should NOT include trivial details ("we used test tubes that were 10cm long"). Be sure to state how you analyzed your data (e.g. ANOVA, T-test, Chi Square, etc...)

Good Example:

"We exposed cells to 0, 15, 30, or 45 seconds of ultraviolet irradiation (400nm). Cells from each irradiation treatment were diluted to 10^{-3} and 10^{-5} of their original concentration. One ml of each of these dilutions was plated on nutrient agar and incubated overnight. The number of colonies was counted the next day."

Bad Example:

"Our lab bench received cells from treatment #1, and these were serially diluted, so that there were 2 different concentrations of bacteria to count on the petri dishes. Lab bench 2 received cells from treatment 2. These were also serially diluted, resulting in 2 different concentrations of bacteria to count."

The Results section:

The results section always starts with normal paragraph (text) format, NOT with tables or figures. You MUST first direct the reader's attention to EACH table and figure before they appear, indicate what they show, and summarize the important data in each.

Good Example of How to Begin the Results:

"The mean IQ of TAMUCT biology students was found to be higher than the mean IQ of Harvard students and of students from many colleges (Figure 1)".

Bad Example of How to Begin the Results:

"Figure 1 clearly shows the results of the experiment."

As with all writing, the results should be organized into coherent logically organized paragraphs and sentences. Data are reported in 3 ways:

Text or paragraph form, if there are just a few numbers to report. *Always required!!!!

Figure: a graph, picture, or diagram

***** A figure will have a detailed legend at the bottom *****

Table: something that contains only numbers, and has a detailed legend at the top.

Do NOT discuss the implications of the results in this section, nor attempt to explain why various results occurred. Only the important points of each figure and table should be described in paragraph format; don't reiterate the whole figure.

Raw data is NOT reported in the Results (i.e. the numbers you collect). Readers are usually interested only in summarized data (e.g. means, standard deviations, totals, etc). However, since this is not going to be submitted for publication, you should include any calculations in an Appendix so your professor can detect any errors you may have made.

The Discussion section:

This is usually the most important part of your paper. This is your chance to be original, cleverly interpret the results you obtained and draw general conclusions from them. Information in the discussion should go from the specific to the general.

This is a typical order of topics which might occur in the Discussion:

Begin the discussion by briefly stating the major conclusions from the results. Explain what the results mean. Discuss whether the results SUPPORT or do NOT support your original hypothesis (es). Your experiment is really very limited in scope, so DO NOT claim that you have "proven" or "disproven" a hypothesis; you perhaps obtained some small bit of evidence to support a hypothesis, or you provided some evidence which contradicts a hypothesis.

In next paragraph(s) expand your discussion of these results. You should compare them to results from other studies, which you should cite properly.

As the discussion continues it is important to offer some original ideas and interpretations. For example, discuss the implications of your results for the biology of the organism(s). For example, why did the behaviors you observe evolve? You may wish to suggest new experiments which would shed further light on the questions raised by your results.

You may discuss sources of error in the experiment, but your BEST guess is that the results reflect reality. Students often feel that their discussion should consist mainly of an analysis of all the things that went wrong with the experiment. I strongly discourage this approach. Naturally all experiments have some weaknesses, but for the purposes of this exercise assume that your results are reasonable. It is OK to get negative results. You should, however, suggest additional experiments using better or different methods.

Always conclude by relating your experiment and results to larger theory and/or applications. Provide context to why your study is important and how your study can be used to further knowledge in that area.

The Literature Cited section:

This section should list all references mentioned in the text. Unlike English papers and other term papers, we do not use footnotes and we don't include factual material from an encyclopedia without crediting it in the appropriate place. You should not have any books or journals listed in this section unless you have cited the author and year in the text of the paper.

We will use the Council of Scientific Editors (CSE) format.

<https://writing.wisc.edu/handbook/documentation/doccse/citationsystems/>

The following hints will improve your writing:

Use the first person (I or we) to write more concisely.

Avoid long run-on sentences. We are trying to write concisely and clearly. Don't use twelve letter words when simpler ones will do just fine.

Use the active voice: "I counted". Not "The number of animals was counted".

Be positive about your results. Say "the data show" instead of "the data suggest".

Genus and species names in Latin are always italicized or underlined. Only the first

letter of the genus is capitalized. ex. Homo sapiens, Danaus plexippus, etc...
 Number all pages and use the metric system. Write numbers as numerals when they are associated with measurement units (2 km), spell them out for numbers < 10 (five hamsters).

In general, DON'T use quotes. Instead, paraphrase the author and cite him/her. Quotes interrupt the flow of your text.

Scientific writing is formal communication. Don't use conversational language, colloquialisms or slang

Some frequently misused/misspelled words:

affect/effect "Effect" is a noun (usually). "Affect" is always a verb. "The effect of their misuse will be that your grade will be affected by subtracting five points".

it's/its "It's" is the conjunction "it is". "Its" is the possessive form

their/there I assume this is just carelessness, proofread your paper.

between/among Between refers to two things, while among refers to more than two.

fewer/less Use "fewer" if you can count the items, "less" if you can't. (less water, but fewer boats)

amount/number Use "amount" if you can't count them, "number" if you can. (The amount of sand and the number of rocks)

oftentimes Drop the "times"; it's redundant.

different from / different than Different from is correct; different than is not.

than/then "than" refers to a comparison - proofread your paper for mix-ups

Always put a zero in front of a naked decimal point (0.12, not .12).

The word data is plural and the word datum singular (i.e. write "data are ...", not "data is...")

Lab Report Grading Rubric:

Category	Exceeds expectations	Meets expectations	Below expectations	Does not meet expectations	Score
Abstract	Clearly and concisely states paper's purpose and main results. Includes at least one sentence from each main section. Engaging and thought provoking.	Clearly and concisely states the paper's purpose and main results. Missing 1 section.	States the paper's purpose and main results. Missing 2 or more sections.	Absent, incomplete, or confusing.	5.0%

Introduction	Thoroughly addresses the topic. Engages reader. Logical progression from broad to narrow topic. Clearly states main hypothesis.	The introduction states the main topic and states main hypothesis.	The introduction states the main topic but does not adequately state main hypothesis.	There is no clear introduction of main topic and hypothesis is missing.	10.0%
Materials & Methods	Clear and detailed narrative of methods so reader can replicate study. Materials are included within text (not listed separately). Only essential information included. Mathematical analysis clearly stated.	Clear and detailed narrative of methods so reader can replicate study. Materials are included within text (not listed separately). Mathematical analysis stated.	Narrative of methods not adequately clear so reader can replicate study. Materials are listed separately. Mathematical analysis stated.	Vague narrative of methods. Materials are listed separately or no materials are indicated. No mathematical analysis stated.	10.0%
Results	Clearly and concisely states the results of the study including statistical analysis. Includes appropriate tables/figures to supplement statements. "Just the facts"; no interpretation or discussion of data.	Clearly and concisely states the results of the study including statistical analysis. Includes some tables/figures to supplement statements (may not be appropriate). May have little interpretation or discussion.	States some of the results of the study; missing some statistical analysis. Includes some tables/figures to supplement statements (may not be appropriate). May include interpretation or discussion of data.	Missing some results of the study; missing all statistical analysis. Tables/figures not included or no text included. May include interpretation or discussion of data.	20.0%

Discussion	The conclusion is engaging and restates the main results and thesis. In-depth discussion and elaboration of all sections of the paper. Relates topic back to 'real world' applications.	The conclusion restates the results. cursory discussion and elaboration of all sections of the paper. Vaguely relates topic back to 'real world' applications.	The conclusion does not adequately restate results or the thesis. Brief discussion of the paper. May not relate topic back to 'real world' applications.	The conclusion does not adequately restate results or the thesis. Incomplete or confusing discussion of the paper. Does not relate topic back to 'real world' applications.	25.0%
Organization/ Structural Development of Topic	Writer demonstrates logical and subtle sequencing of ideas through well-developed paragraphs; transitions are used to enhance organization.	Paragraph development present but not perfected.	Logical organization; organization of ideas not fully developed.	No evidence of structure or organization.	5.0%
Spelling/ Punctuation	No errors in punctuation, capitalization and spelling.	Almost no errors in punctuation, capitalization and spelling.	Many errors in punctuation, capitalization and spelling.	Numerous and distracting errors in punctuation, capitalization and spelling.	2.5%
Grammar	No errors sentence structure and word usage.	Almost no errors in sentence structure and word usage.	Many errors in sentence structure and word usage.	Numerous and distracting errors in sentence structure and word usage.	2.5%
In-text citations	All facts are cited using primary literature or peer sources. Correct format with no errors	Some facts are cited. Correct format, very few errors.	Few facts are cited. Correct format, few errors	No in-text citations.	5.0%

Literature cited	Correct format with no errors. Includes more than 10 major references (e.g. peer reviewed science journal articles, books, and no more than two professional internet sites. No encyclopedic type references).	Correct format with few errors. Includes more than 5 major references (e.g. peer reviewed science journal articles, books, and no more than two professional internet sites. No encyclopedic type references).	Correct format with some errors. Includes more than 3 major references (e.g. peer reviewed science journal articles, books, and no more than two professional internet sites. No encyclopedic type references).	Not correct format and/or with many errors. Includes more than 0-3 major references (e.g. peer reviewed science journal articles, books, and no more than two professional internet sites. No encyclopedic type references).	5.0%
Figures and tables	Tables/figures numbered consecutively in separate series. Title is complete enough to be understood without referring to text. Legend, headings, and units of measure are included. Footnotes used as necessary to provide clarity with respect to: units of measure that do not fit in the heading, explanations of abbreviations and symbols, statistical significance of entries.	Tables/figures numbered consecutively in separate series. Title is complete. Legend, headings, and units of measure are included. Footnotes used to provide clarity.	Tables/figures numbered, but not sequentially. Title is incomplete. Legend, headings, and units of measure are not fully included. Footnotes used but do not provide enough clarity	Tables/figures not numbered. No title. Legend, headings, and units of measure are not included. Footnotes are not used but are needed.	10.0%
Total					100.0%

Laboratory Assignments

There will be 2 lab practical exams consisting off identification of slides and specimens and related questions. There will be 2 additional lab projects - monitoring vegetative cages and Plant biology summary of a selected field plant on the university property.

Plant Journal

Introduction: To truly appreciate botany and the development of plant life, you should observe the progression of plant life through early development to a more mature stage. The spring semester gives us an opportunity to observe plant life as winter dormancy ends and the growth of annual and perennial spring plant species begin. Therefore, your task would be to pick an area and return to at a minimum of every 2 weeks and note the development of plant species. Can you see the morphological changes in individual plant species as they grow and develop over the spring period. Can you note any particulars such as use by birds and animals and the overall biomass of vegetation as the seasons change. Identify at least one particular plant species and document its development by drawing or a by a photo journal. If you are on private property you can build a small cage around an area and compare that to an unprotected areas. Are the growth patterns the same? Why or why not? If you desire you can press leaves or flowers to include with journal.

Materials and Methods: Small notebook for observations, Pen; Optional items: Field guides, wire cage

Starting this week select an area that is relatively undisturbed by heavy human activity. This can be on campus, at your home, a roadside park or in another area. Please be sure that you pick a safe place that you can see plants and not risk your safety. Roadsides are great areas to compare the growth in the bar ditch vs across the fence, but please respect property rights and do not chose a busy thoroughfare where you could be in danger from passing motorists. You should go to the same place each week, it would defeat the purpose of the exercise to go to different locations. You will have a total of at least 6 weekly entries; do not observe more than once/week. You certainly can and are encouraged to have more than 6 entries.

Information to Record:

1. Location
2. Day
3. Weather (seasonal Information) still cold, raining, warming,
4. Record what changes take place from week to week in your area. Answer the following questions as you are writing.
 - a. How is the overall plant population changing? Growth stage, overall biomass,
 - b. What are they doing? Plants as young shoots, leaf formation, flowering
 - c. How do the trees look? The wildflowers? - note seasonal growth changes
 - d. What are your conclusions about this particular point in time about the

growth stage of the plant population. Hypothesize about how current climatic conditions, animal and bird use and any other factors that might be influencing this particular plant community.

I expect that you will write this in paragraph form plus any pictures, drawings or charts you feel may help explain your data. I also expect at least 1 page per entry. You will be graded on completeness. The more you put into this, the better your grade... Remember, this is your journal. This can be turned in as the actual journal if all entries are legible or via Canvas as an electronic document. With the ubiquitousness of cell phone cameras I would highly encourage the use of photos to help document your observations. I hope you will keep this and look back on it someday.

Journal Grading Rubric

Category	Exceeds Expectations	Meets Expectations	Below Expectations	Does not meet Expectations	Score
Location	Abundance of natural habitat and plant life	Presence of natural habitat and plant life	minimal natural habitat and plant life	no natural habitat and plant life	10%
Basic Information & number observations	Complete and detailed w/ 6 plus observations	Complete with 6 observations	Missing Information and less than 4 - 6 observations	No Information and less than 4 observations	10%
Journal Documentation	Complete and detailed with required and additional information recording	Complete with required information recording	Incomplete with partial required information recording	No required information	70%
Neatness and organization	Text is digital or if handwritten is legible, pictures documenting habitat change included. Journaling is complete and detailed. Detailed effort expended for neatness and organization	Text is digital or if handwritten is legible, pictures documenting habitat change included. Journaling meets expectations. Effort expended for neatness and organization	Text is digital or if handwritten is illegible, pictures documenting habitat change not included. Journaling below expectations. Little effort expended for neatness and organization	Text is digital or if handwritten is illegible, pictures documenting habitat change not included. Journaling below expectations. Little to no effort expended for neatness and organization	10%
					100%

