

BIOL 4380-130, CRN 81338, Evolution

Fall 2022

Texas A&M University-Central Texas

COURSE DATES, MODALITY, AND LOCATION

Mode of instruction and course access:

This course meets face-to-face, with supplemental materials made available online through the A&M-Central Texas Canvas Learning Management System [<https://tamuct.instructure.com/>].

Time/Day: M/W 2:30 pm– 3:45pm

Where: Warrior Hall 315

Dates: August 22, 2022 – December 9, 2022

INSTRUCTOR AND CONTACT INFORMATION

Instructor: Ms. Schachner

Office: Heritage Hall 302-S (adjunct office)

Phone: NA

Email: CANVAS mail or l.schachner@tamuct.edu

Office Hours: Mondays 11am to 1pm

Student-instructor interaction

I will only be on campus Mondays and Wednesdays. Other days of the week I will check my email at least once a day.

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](http://www.safezoneapp.com) website [www.safezoneapp.com].

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

1. Download the SafeZone App from your phone store using the link below:
 - [iPhone/iPad](https://apps.apple.com/app/safezone/id533054756): [<https://apps.apple.com/app/safezone/id533054756>]
 - [Android Phone / Tablet](https://play.google.com/store/apps/details?id=com.criticalarc.safezoneapp)
[<https://play.google.com/store/apps/details?id=com.criticalarc.safezoneapp>]
2. Launch the app and enter your myCT email address (e.g. {name}@tamuct.edu)
3. Complete your profile and accept the terms of service

For updates on COVID information, please monitor the University [website](https://www.tamuct.edu/covid19/)
[<https://www.tamuct.edu/covid19/>]

COURSE INFORMATION

Course Overview and description

Examine evolutionary theory, including the historical development of components of evolutionary theory, population level microevolution, the fossil record, and macroevolution. Prerequisite(s): BIOL 1407 and BIOL 3452.

Course Objective or Goal

Student Learning Outcomes

Students will:

- a. understand the centrality of evolutionary theory to all of biology
- b. explain the impact of gene distribution in populations on evolution, adaptation, natural selection and speciation.
- c. be able to manipulate allele frequencies using Hardy-Weinberg
- d. demonstrate the importance and usefulness of evolutionary theory in practical or applied applications.

Required Reading and Textbook(s)

1. Bergstrom, C.T., and Dugatkin, L.A. 2016. Evolution 2nd ed. WW Norton & Company.

COURSE REQUIREMENTS

Course Assessments:

- 40% Three lecture exams (SLO: a, b, c, d)
- 20% Final Comprehensive Exam (SLO: a, b, c, d)
- 20% Term paper – instructions and rubric at end of syllabus (SLO: a, b, d)
- 15% Assignments (SLO: a, b, c, d)
- 5% Participations (SLO: a, b, c, d)

Grading Criteria Rubric and Conversion

Grading scheme

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 on CANVAS as I am finished with my evaluation of your work. Expect a one week turn around for most assignments. Lengthier assignments (e.g. term papers) may take a little longer to evaluate.

COURSE OUTLINE AND CALENDAR

Complete Course Calendar – dates are subject to change

1. Week of August 22
 - a. Lecture Topic: Overview; Early evolutionary ideas
 - i. Chapters 1&2
2. Week of August 29
 - a. Lecture Topic: Natural Selection & Phylogeny
 - i. Chapter 3 & 4
3. Week of September 5-NO SCHOOL MONDAY
 - a. Lecture Topic: Inferring Phylogeny
 - i. Chapters: 5
4. Week of September 12
 - a. Lecture Topic: Inferring phylogeny; Transmission genetics
 - i. Chapters 5 and 6
5. Week of September 19
 - a. Lecture Topic: Exam I Ch 1-5 (Monday) and Transmission genetics
 - i. Chapter 6
6. Week of September 26
 - a. Lecture Topic: Genetics of populations; Evolution in finite populations
 - i. Chapters 7 and 8
7. Week of October 3
 - a. Lecture Topic: Evolution in finite populations; Evolution at multiple loci
 - i. Chapters 8 and 9
8. Week of October 10
 - a. Lecture Topic: Genome evolution; Origin and evolution of early life
 - i. Chapters 10 & 11
9. Week of October 17

- a. Lecture Topic: Exam II Ch 6-10 (Monday); Major transitions
 - i. Chapter 12
- 10. Week of October 24
 - a. Lecture Topic: Evolution and development; Species and speciation
 - i. Chapters 13 and 14
- 11. Week of October 31
 - a. Lecture Topic: Species and speciation; Extinction and evolutionary trends
 - i. Chapters 14 and 15
- 12. Week of November 7
 - a. Lecture Topic: Sex and sexual selection; Evolution of sociality
 - i. Chapters 16 and 17
- 13. Week of November 14
 - a. Lecture Topic: Exam III Ch 11 - 15 (Monday) and Evolution of sociality; Coevolution
 - i. Chapters 17 and 18
- 14. Week of November 21
 - a. Lecture Topic: Coevolution; Human evolution)
 - i. Chapters 18 and 19
- 15. Week of November 28
 - a. Lecture Topic: Human evolution; Evolution and medicine
 - i. Chapters 19 and 20
- 16. Week of December 5
 - a. Comprehensive Final Lecture Exam (Monday)

Important University Dates

http://catalog.tamuct.edu/undergraduate_catalog/general-information/academic20calendars20and20final20exam20schedule/

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

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 Warrior Center for Student Success, Equity 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](https://tamuct.instructure.com/courses/717) Canvas page (log-in required) [https://tamuct.instructure.com/courses/717]

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. Any deviation by students from this expectation may result in a failing grade for the assignment and potentially a failing grade for the course. All academic misconduct concerns will be referred to the Office of Student Conduct. 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 referral](https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=0), [https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=0].

Drop Policy

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

[<https://federation.ngwebsolutions.com/sp/startSSO.ping?PartnerIdId=https://eis-prod.ec.tamuct.edu:443/samlSso&SpSessionAuthnAdapterId=tamuctDF&TargetResource=https%3a%2f%2fdynamicforms.ngwebsolutions.com%2fSubmit%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.

Important information for Pregnant and/or Parenting Students

Texas A&M University-Central Texas supports students who are pregnant, experiencing pregnancy-related conditions, 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/pregnant-and-parenting-students.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 Library & Archives

The University Library & Archives 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>]

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. 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 [WCOOnline](#) [<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.

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) [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.

Assignments. There are weekly homework assignments (CANVAS quizzes) based on each chapter we cover in class. In addition, there may be additional assignments throughout the semester; these will be announced and given sufficient time to complete. All assignments are to be turned in, on time, 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. **No assignments will be accepted after one week past the due date.**

Exams. Exams will be administered in class. The exams will be a mixture of matching, multiple choice and short answer, designed to provoke reflection, critical thought, and application of knowledge. 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.

1. There will be no bathroom breaks allowed during any exam. Be sure that you address this issue before beginning an exam.
2. 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...
3. 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.
4. 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.
5. All backpacks and materials as well as cell phones, smart watches and other electronic devices, must be turned off and placed at the front of the room on test day.
6. Jackets, sweaters, etc must be placed in the front of the room on test day, unless otherwise indicated by teacher.

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Accommodated exams. All students needing special accommodations must submit an accommodation form from the Office of Access and Inclusion (see above) listing the specific accommodations needed. Students are responsible for scheduling their own exam times with the TAMUCT Testing Center.

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.

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. Any inappropriate or offensive behavior of any kind (in class/lab/office or on assignments/exams) will be subject to a penalty commensurate with behavior, including a Behavioral Intervention Team report to Student Services.

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.

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 may 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 three-credit class that meets for four hours a week should expect to spend an additional six 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 (either in lab or in class). 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.

Campus Closure Back-Up Plan. In the event that campus closes this class will switch to a 100% online format with synchronous WebEx virtual lectures during normal class time. If needed exams will be administered via Proctorio.

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.

Copyright. 2022 by Lauren Schachner at Texas A&M University-Central Texas, College of Arts and Sciences; 1001 Leadership Place, Killeen, TX 76549; 254-519-5723; Fax 254-519-5781; l.schachner@tamuct.edu

BIOL 4380 Evolution Term Paper

Assignment: Write an 8-10 page paper on one of the topics listed below (topics may not be duplicated – to be determined on a first come, first served basis).

Go through the *Writing in the Biological Sciences* tutorials in CANVAS to help you with your outline/annotated outline, writing your term paper, and citations

General: Remember that the audience for this paper is a college educated biologist, so very simple terms need not be defined. However, proper use of citations is expected (CSE format). I expect you to proof read your papers for any of spelling and grammar mistakes as I will take off points for this. If you feel that you need help writing, feel free to take advantage of the wonderful people at the TAMUCT writing center, be sure to make an appointment first and do not wait until the last minute!

Be assured that the university has a strict policy on plagiarism and cheating. I will uphold that policy and anyone caught conducting academic dishonesty will receive a zero – consider yourself warned!

Research: I expect that you will research your topic using the library, the internet, your textbook and, especially, professional journals. Use primary and secondary sources, not just the internet (I will take off points if your sources are from the internet). Be very careful when reading information that is not from a peer-reviewed source (i.e. not professional journals) because many groups/people tend to post information that serves their particular agenda and is not necessarily scientifically correct (I have seen several of these). I expect that if you use one of these sources, you will check the validity of their facts with primary sources.

Be sure to introduce and define your topic broadly first, then give more detail and examples to demonstrate your points. You should also end with a summary section that neatly ties the paper together. Tables, figures and pictures are to be on **separate pages** at the end of the paper (after references); they are not to be inserted in the pages of text.

Text Format guidelines (I will be strict about this):

1. Double spaced lines (except for literature cited, which should be single spaced)
2. 1 inch margins (check this, most defaults are 1.5; you can change it in page setup)
3. Times New Roman font, size 12
4. No space between paragraphs
5. No page breaks between sections

Citations:

Please use the Council of Scientific Editors (CSE) "**Author, Year**" citation style for your writing:

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

Reference the Citing References tutorial in your CANVAS shell

Other miscellaneous:

The following hints will improve your writing:

1. 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.
2. 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...
3. Write numbers as numerals when they are associated with measurement units (2 km), spell them out only for numbers < 10 (e.g. five hamsters; 20 geese). Always spell out a number if it is the first word of a sentence.
4. DON'T use quotes. Follow the advice of Ralph Waldo Emerson, who said, "I hate quotations. Tell me what you know." Instead, paraphrase the author and cite him/her. Quotes interrupt the flow of your text.
5. Do not use contractions in formal writing.
6. Scientific writing is formal communication. Don't use conversational language, colloquialisms or slang.
7. Proofread, proofread, proofread!
8. Some frequently misused/misspelled words (spell check will not catch most of these):
 - a. 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".
 - b. it's/its "It's" is the conjunction "it is". "Its" is the possessive form
 - c. their/there/they're I assume this is just carelessness, proofread your paper.
 - d. between/among Between refers to two things, while among refers to more than two.
 - e. fewer/less Use "fewer" if you can count the items, "less" if you can't. (less water, but fewer boats)
 - f. amount/number Use "amount" if you can't count them, "number" if you can. (The amount of sand and the number of rocks)
 - g. oftentimes Drop the "times"; it's redundant.
 - h. different from / different than Different from is correct; different than is not.
 - i. than/then "than" refers to a comparison – proofread your paper for mix-ups
 - j. The word data is plural and the word datum singular

Suggested Research Topics: *Every topic must be cleared with Ms. Schachner first!*

- Pick a species of interest (NOT HUMANS) and you don't know much about, or are interested in) and write about it from an evolutionary perspective.
 - What is the classification hierarchy of your organism?
 - When did it first appear on earth; how do you know?
 - Discuss its close relatives (hint: that would be the next branch on the tree with which it shares a common node)? How are they related/similar? How did they diverge?
 - Where does your organism live? How is it adapted to its environment?
 - Does your organism form a symbiotic relationship with another organism? Explore.
- Pick a major evolutionary theory or topic and explore the literature to either support or not support that theory (e.g. Red Queen Hypothesis, Run-away selection, Coevolution)
 - Fully discuss the theory or topic as it is currently known
 - Explore examples in literature that provide evidence for/against
 - Discuss implications of theory or topic across different species

Term Paper Grading

Topic Approval (5%)	_____	Due August 31, 2022
First Paper Outline (5%)	_____	Due September 14, 2022
Annotated outline (15%) (includes citations)	_____	Due October 12, 2022
First Submission (25%) (Note: this is not a “rough” draft! You are expected to have a full paper submitted)	_____	Due November 9, 2022
Final Submission (50%)	_____	Due November 30, 2022

See next page for Term Paper Rubric