TEXAS COLLEGE
Division of Natural and Computational Sciences
Department of Biology
Course Syllabus BIOL 3474 Ecology

COLLEGE MISSION

College is a Historically Black College founded in 1894, by the Colored Methodist Episcopal Church, now the Christian Methodist Episcopal Church (CME). Our mission continues to embody the principles of the Christian Methodist Episcopal Church. The College shall prepare students with competencies in critical and creative thinking related to the knowledge, skills, and abilities as defined in areas of study. Additionally, the College shall provide an environment to inspire intellectual, spiritual, ethical, moral, and social development, which empowers graduates to engage in life-long learning, leadership, and service.

TEXTBOOK(S): *Environmental Science, A Global Concern* by Cunningham and Cunningham, 15th Edition, McGraw-Hill Publishers. ISBN: 9781264157327 (Required)

Required Readings/Resources:

- **Global warming** will happen faster than we think. Xu Y, Ramanathan V, Victor DG.Nature. 2018 Dec;564(7734):30-32. doi: 10.1038/d41586-018-07586-5.
- **Global warming** and recurrent mass bleaching of corals. Hughes TP, Kerry JT, Álvarez-Noriega M, Álvarez-Romero JG, Anderson KD, Baird AH, Babcock RC, Beger M, Bellwood DR, Berkelmans R, Bridge TC, Butler IR, Byrne M, Cantin NE, Comeau S, Connolly SR, Cumming GS, Dalton SJ, Diaz-Pulido G, Eakin CM, Figueira WF, Gilmour JP, Harrison HB, Heron SF, Hoey AS, Hobbs JA, Hoogenboom MO, Kennedy EV, Kuo CY, Lough JM, Lowe RJ, Liu G, McCulloch MT, Malcolm HA, McWilliam MJ, Pandolfi JM, Pears RJ, Pratchett MS, Schoepf V, Simpson T, Skirving WJ, Sommer B, Torda G, Wachenfeld DR, Willis BL, Wilson SK.Nature. 2017 Mar 15;543(7645):373-377. doi: 10.1038/nature21707.
- Early climate models successfully predicted **global warming**. Kay JE.Nature. 2020 Feb;578(7793):45-46. doi: 10.1038/d41586-020-00243-w.
- **Global Warming**, Climate Change, and Environmental Pollution: Recipe for a Multifactorial Stress Combination Disaster. Zandalinas SI, Fritschi FB, Mittler R.Trends Plant Sci. 2021 Jun;26(6):588-599. doi: 10.1016/j.tplants.2021.02.011. Epub 2021 Mar 18.

METHODS OF INSTRUCTIONAL DELIVERY: Online with synchronous technical support sessions as needed. Lecture notes, discussion, collaboration, technology, reading, virtual laboratory assignments and individual projects.

COURSE DESCRIPTION

This class is designed to be a framework for an interdisciplinary analysis of environmental problems. The fundamental principles presented will permit the student to understand local and global environmental issues.
PREREQUISITE COURSES: BIOL 1471 G Biology I

TEXAS COLLEGE OUTCOMES

1. Critical Thinking Skills
2. Communication Skills
3. Empirical and Quantitative Skills

4. Teamwork
5. Social Responsibility
6. Personal Responsibility

Furthermore, BIOL 3474 ensures the following institutional objectives:

1. Enhance communicative skills (oral and written)
2. Enhance critical thinking and technology skills
3. Enhance leadership abilities and spiritual awareness
4. Create opportunities for professional and post-graduate pathways

All learning objectives reflect the Texas College Core Values:
Academic Excellence: Developing a culture of curiosity and creativity that will challenge the frontiers of teaching/learning; stimulate research; raise the level of analytical reasoning and inquiry; and enable students to acquire leadership, human relations, communication, and technology skills.
Integrity: Instilling the pursuit of character, honesty, and sincerity of purpose as the moral rubrics upon which the behaviors of our graduates and College family are anchored.
Perseverance: Implanting diligence, enterprise, and pride in the application of skills, knowledge and abilities developed during the course of study at Texas College.
Social Responsibility: Promoting in the College community a conscious awareness that we are all stewards of the resources entrusted to our care.
Tolerance: Emphasizing openness to divergent points of view, applying an eclectic approach to rational and analytical thinking.
Community Service: Encouraging self-extension in service to others as the heart and soul of our educational enterprise.

Chapter	**Activities and Due dates**	Start date and end date of module	
Introduction	Syllabus quiz Pretest Lab 1: Safety	Week 1	
Chapter 1 Understanding Our Environment continued	Lecture, Discussion, assignment Lab 2: Human Population Growth and climate change Chapter 1 test Case study/ discussion/Data Analysis	Week 2 and 3	
Chapter 2 Principles of Science and Systems Pages 37-50	Chapter 2 test Lands and Environment Lab assignment; Lecture, Discussion, Lab 3: Carbon Footprint Case study/ discussion/Data Analysis	Week 3 and 4	
Chapter 3 Matter, Energy, and Life Pages 51-73	Lab4: Nutrient Cycling Lecture, Discussion, Chapter 3 test Case study/ discussion/Data Analysis	Week 5 and 6	

Chapter 5 Biomes Pages 98-115	Lab 5: Biome; Lecture, Lecture, Discussion, Chapter 5 Test Case study/ discussion/Data Analysis	Week 7 and 8	
	Ecology Research Project		
Chapter 6 Population Biology Pages 116-130	Lab 6: Predator Prey; Lecture, Discussion, Chapter 6 Test Case study/ discussion/Data Analysis	Week 9 and 10	
Chapter 7 Human Populations Pages 131-153	Lab 7: Human Population; Lecture, Discussion, Data Analysis: Fun with Numbers Case study/ discussion/Data Analysis	Week 11-12	
Chapter 11 Biodiversity, Preserving Species Pages 223-245	Lab 8: Lionfish invasion Lecture, Discussion Chapter 11test Case study/ discussion/Data Analysis	Week 13	
Final Exam		Week 14	
Total reading hours—60 (4 credit hour course)	**Total participation hours—120 (4 credit hour course)**		

MEASURABLE STUDENT LEARNING OUTCOMES

Measurable Student Learning Outcomes (MSLO) as they relate to intellectual development and student engagement: After completion of the course, students will be able to demonstrate an understanding of the following SLOs

1. Examine the use of science based on factors such as ethical standards, economics, personal and societal decision. (TC 1, 2 and 4)
2. Examine energy transformation and law of conservation of matter and energy(TC 1, 2 and 4)
3. Evaluate the relationship between organisms and the environment (TC 1, 2 and 4)
4. Compare cycles in earth system. (TC 1, 2 and 4)
5. Examine the interdependence and interactions of living things in terrestrial and aquatic ecosystem. (TC 1, 2 and 4)

By the end of the semester, the student will be able to satisfactorily complete all the listed students learning objectives with the aid of lecture notes at a minimum of 70% competency level based on the post test scores.

Roles and Responsibilities: Students and Faculty

This class comes with expectations for college-level students. Failure to meet these expectations can result in a lower grade, and even expulsion from the class.

1. Class will begin promptly at the beginning of each class period. If you are late you forfeit your right to enter class.
2. Cell phones and Laptops must be turned off during class, unless advised otherwise by the instructor. Any student who violates this policy and leaves class to answer a phone call will not be readmitted to the class.
3. Sleeping in class will not be tolerated. If you violate this rule you will be asked to leave class. You will be asked to meet with the instructor before returning to class.
4. Classroom Attire: Students are expected to follow the College dress code. Students dressed inappropriately will be dismissed with an unexcused absence for the day.
   - Female students are required to wear covering over the upper portions of their bodies.

- Low-cut blouses are prohibited.
- Back-out tops, blouses and t-shirts are prohibited.
- Micro-mini shorts that expose the buttocks are prohibited.
- Any dress, shirt, short, etc., that distracts from the teaching/learning process in the classroom is prohibited.
- Caps, head gear, du rags are prohibited within the buildings.
- Male students are not permitted to wear shaggy pants.
- Male students are not permitted to wear sleeveless/muscle shirts in the classrooms or on campus.
- Male students are required to wear a belt with pants.
- Shoes are required in the classroom and cafeteria.
- No house shoes are permitted on campus.

5. If you leave class during an exam, you will not be allowed to complete the exam. You do have the option of taking the makeup exam which is always an essay exam.

6. Missed assignments may only be made up with an Excused Absence. Students with excused absences have one week to make up their work, otherwise the grade will be entered as a zero. Excused Absences are:

a. Personal illness or illness of an immediate family member **with a doctor's statement.**

b. Death of an immediate family member **with the funeral program.**

c. Patriotic Duty (jury, or military duty, or court appearance) **with a copy of the summons.**

d. Co-curricular or extra-curricular obligations to the College (athletics, conferences, seminars, performances) **with a written notice from the Office of Academic Affairs.**

All makeup exams and assignments are given during office hours. Students are responsible for it.

7. Late assignments will be given 70% of the earned grade.

8. Inclement Weather: The President of Texas College makes the decision and announces when classes are canceled due to inclement weather. If in doubt, check your Texas College email, or the Texas College website.

9. Attendance: It is unlikely that students will earn an acceptable grade if they do not attend class regularly. Attendance is recorded for each class. Attendance alone does not guarantee a passing grade. It is important that students take complete and comprehensive notes during lectures. It is also essential that student study regularly.

10. Academic Ethics:

Texas College may initiate disciplinary proceedings against a student accused of scholastic dishonesty. At the minimum the student, or all students involved, will fail the assignment or exam.

Scholastic dishonesty includes, but is not limited to, statements, acts, or omissions related to applications for enrollment or award of a degree, and/or the submission as one's own work material that is not one's own. Scholastic dishonesty may involve, but is not limited to, one or more of the following acts: cheating, plagiarism, collusion, use of annotated texts or teacher's editions, and/or falsifying academic records.

Plagiarism is the use of an author's words or ideas as if they were those of the student without giving credit to the source, including, but not limited to, failure to acknowledge a direct quotation.

Cheating is the willful giving or receiving of information in an unauthorized manner during an examination, illicitly obtaining examination questions in advance, copying computer or internet files, using someone else's work for the assignments as if it were one's own, or any other dishonest means of attempting to fulfill the requirements of a course. Cheating **during the test/exam will result in a grade of zero for the exam**.

Collusion is intentionally aiding or attempting to aid another in an act of scholastic dishonesty, including but not limited to, providing a paper or project to another student; providing an inappropriate level of assistance; communicating answers to a classmate during an examination; removing tests or answer sheets from a test site, and allowing a classmate to copy answers and signing the role for an absent student.

COURSE REQUIREMENTS

Submission of Assignments:

All assignments must be submitted on time **in JICS. Please do not submit work through emails.** Late assignments will get only 70% credit of the earned grade. If **extenuating circumstances** prevent you from turning in an assignment, please contact me **before** the due date. Late work will be accepted without penalties **only if** emergencies are documented or Texas College has technology outages. Students are required to have access to internet that is JICS compatible.

Students should check emails and classroom announcements daily to remain well-informed.

Students are expected to submit assignments on the due date. If you submit an assignment late, you will receive 70% of the earned grade for the assignment. Assignments which are more than a week late will not be accepted at all. No excuses will be accepted, including difficulties with technology. All assignments/tests must be uploaded in the coursework.

A **complete schedule** of assignments corresponding tests, project, activities, and labs is be available under the link coursework.

For the successful completion of the course, students need to have the access of textbook and a considerable amount of reading. They can also make use of resources from the World Wide Web.

Due to the complexity of preparation, these assignments will not be returned to individual students. You can review your assignments after the due date. Grades will be posted in the online gradebook.

Lecture: All tests/exams will cover material presented in chapters from your textbook. Each test will have 25 questions and worth of 100 points. Exams can include multiple choice, short answer, fill-in-the blank, true/false and matching questions. All the tests will be online and open notes. Tests will be posted in the coursework section of the course located in My TC portal.

Final exam will be comprehensive and is of 200 points each. It will include all the chapters covered during the semester and the exams will have 40 questions.

All the tests are open book. **You will not be allowed to repeat or redo the test assignments.** All the test assignments will be in an online format. Students will need to open the test from their coursework and answer **all the questions. Hit the submit button when they are finished. They will get the grades for the test/assignment only after the due date is passed.**

Homework/Activities/Discussion:

Students will be assigned case studies, and discussion. All assignments will be of 100 points each.

Laboratory Assignments:

Each lab assignment is worth of 100 points. All points will be averaged to 25% of total course grade. Labs are required for successful completion of the course. All the lab assignments must be online in a **file upload format**.

Note: Designated time will be given to each student to discuss student progress. Make an appointment with your instructor.

PROGRAM FOR WHICH THE COURSE IS REQUIRED

Ecology is a requirement for Biology Majors which leads to a Bachelor of Science (BS) Degree in Biology.

METHOD OF STUDENT EVALUATION

For the assessment of each objective, multiple choice, short answer, fill-in-the blank, true/false and matching questions test will be given**.** Application activities will be given for each objective.

1. **Lecture ----------70%**

   Chapter exams: 100 points each;

Final exam: 200 points
Worksheets/class quizzes 100 points each
Kahoot Challenges- 10 points each
QEP Assignment – Writing Assignment- 100 points
Attendance 5%

2. **Laboratory assignments----------25%**
   Lab assignment: 100 points each

QEP Assignment: consists of a five-paragraph essay. The essay will be on: Human Overpopulation (food & water shortages, habitat destruction)

Grading Rubric:

90-100	A	Transformative (and submitted on time)
80-89	B	Proficient
70-79	C	Developing
60-69	D	Beginning
Below 60	F	Not Submitted

*Grade of C or above is required to pass the course. The course must be repeated for Biology Majors if grade is a D or below.

Instructional Strategies to better support achievement in STEM courses:

- In class Discussion
- In class Presentations and handouts
- Relevant videos
- Hands on Project
- Real world applications
- Collaborative Problem Solving
- Resources for Independent learning

RUBRICS FOR GRADING WRITTEN ASSIGNMENTS FOR BIOL 3474

	Excellent (5)	Satisfactory (4-3)	Not Satisfactory (2-1)
Content	Clear topic and many interesting details	Somewhat clear topic and some mildly interesting details	Topic not clear and few details
Organization	Details and sequences are clearly evident	Details and sequence are evident but not clear	Details and sequence are not evidence (jumbled/confused)
Fluency	Written in natural language	Some natural and patterned language	Unnatural language patterns
Mechanics	Very few errors (90%) spelling grammar and usage capitalization punctuation	Majority conventions correct (80%) spelling grammar and usage capitalization punctuation	Frequent errors (70% correct) spelling grammar and usage capitalization

Remediation Plan:

Students who have difficulty with the course will have the opportunity to:

- Meet with the professor for one-on-one support through fact-to-face meetings, telephone sessions, or web conferencing.
- Revise unsatisfactory work until it is satisfactory with in a 7-day limit.

DIVERSITY STATEMENT

Texas College is committed to creating a community that affirms and welcomes persons from diverse backgrounds and experiences and supports the realization of their human potential. We recognize that there are differences among groups of people and individuals based on ethnicity, race, socioeconomic status, gender, exceptionalities, language, religion, sexual orientation, and geographical area. All persons are encouraged to respect the individual differences of others.

DISABLITIES AND SPECIAL NEEDS

Texas College provides equal opportunity to qualified disabled persons in accordance with the requirements of the American with Disabilities Act (ADA). This Act ensures that individuals with current disabling conditions are provided reasonable accommodations to enable them to enjoy the programs, activities, services, and employment opportunities offered by the College. Texas College adheres to this provision once a student/employee self identifies. Students may
contact the Office of Academic Affairs for information/assistance at: adasupport@texascollege.edu .

WRITING ACROSS THE CURRICULUM

Strong communication skills are critical for professionals. In an effort to maintain a commitment to developing effective writing skills for all students, all writing assignments will be evaluated for overall communicative competence. The following will be considered when grading written assignments:

- Word-processed (12 font), double-spaced, one inch left, right, top and bottom margins
- Content
- Clarity and Organization
- Source(s)
- Depth of thought/Originality
- Technology and Delivery
- Grammar and mechanics

Each student is expected to complete the assignments as specified. There will be No exceptions.

NOTICE OF NON-DISCRIMINATION

Texas College does not discriminate in any employment practice, education program, or educational activity on the basis of race, color, religion, national origin, sex, age, disability, sexual orientation, or veteran status. The Vice President for Academic Affairs has been designated to handle student inquiries regarding non-discrimination policies. Contact information is: Texas College, Attn: Vice President for Academic Affairs, Office of Academic Affairs/Martin Hall 1st floor, 2404 North Grand Avenue, Tyler, Texas 75702.

Netiquette:

All students in the online class must strictly observe the standards of polite online communication know as netiquette. Online learning requires that everyone in the course (both students and professors) work together and

share their ideas. Since we are not meeting face to face, it is expected that you foster a respectful environment when you are sharing your ideas.

WITHDRAWAL POLICY

Withdrawal from a course is the student's responsibility. Refer to the Texas College Academic Policies and Responsibilities for additional information on the College's withdrawal policy. The last day to withdraw from school is April 12.

BIOLOGY PROFESSIONAL ORGANIZATIONS/ASSOCIATIONS

Professional Associations are a great source of information about internships, career pathways, conferences, scholarships, opportunities to meet people in your field, and a whole host of career-related topics. Usually associations will provide a discounted membership rate for students enrolled in college. A few of these organizations include:

- American Academy of Forensic Sciences
- American Association for the Advancement of Science
- American Institute of Biological Sciences
- The American Physiological Society
- American Society for Biochemistry and Molecular Biology
- American Society of Crime Laboratory Directors
- American Society for Human Genetics
- American Society for Microbiology
- Association for Women in Science
- The International Association for Science, Technology and Society
- National Academy of Science
- Human Genetic Modification | Center for Genetics and Society

CAVEAT

In the event of extenuating circumstances, the schedule and requirements for this course may be modified.

Generalist EC6 Standards taught:
Domain IV: Science
Competency 024: *(Safe and Proper laboratory processes): the teacher understands how to manage learning activities, tools, material, equipment and technologies to ensure the safety of all students.*
Competency 025: (Scientific Inquiry): *The teacher understands the history and nature of science, the process and role of scientific inquiry and the role of inquiry in science instruction.*
Competency 026: (impact on daily Life/Environment): *The teacher understands how science impacts the daily lives of students and interacts with and influences personal and societal decisions.*
Competency (Unifying concepts and processes in Science): The teacher knows and understands the unifying concepts and processes that are common to all sciences.
Competency 033: (physical Science): *The teacher understands energy transformations and the conservation of matter and energy.*
Competency 037: (Life Science): *The teacher understands the relationship between organisms and the environment.*
Science Standard I: The Science teacher manages classroom, field and laboratory activities to ensure the safety of all students and ethical care and treatment of organisms and specimens.
Science Standard II: The Science teacher understands the correct use of tools, material, equipment and

technologies.
Science Standard III: The Science teacher understands the process of scientific inquiry and its role in science instruction.
Science Standard VI: The science teacher understands the history and nature of science.
Science Standard VII: The Science teacher understands how science affects the daily lives of students and how science interacts with and influences personal and societal decisions.
Standard IX: The science teacher knows and understands the science content appropriate to teach statewide curriculum in life sciences.

Science 4-8 standards taught:
Domain I – Scientific Inquiry and processes
Domain III – Life Science
Competency 001: *The teacher understands how to manage learning activities to ensure the safety of all students.*
Competency 002: *The teacher understands the correct use of tool, material, equipment and technologies.*
Competency 003: *The teacher understands the process of scientific inquiry and the history of nature of science.*
Competency 004: *The teacher understands how science impacts the daily life of students and interacts with and influences personal and societal decisions.*
Competency 005: *The teacher knows and understands the unifying concepts and processes that are common to all sciences.*
Competency 015: *The teacher understands the relationship between the organisms and the environment.*
Science Standard I: The science teacher manages classroom, field and laboratory activities to ensure the safety of all students and ethical care and treatment of organisms and specimens.
Science Standard II: The science teacher understands the correct use of tools, material, equipment and technologies.
Science Standard III: The science teacher understands the process of scientific inquiry and its role in science instruction.
Science Standard VI: The science teacher understands the history and nature of science.
Science Standard VII: The Science teacher understands how science affects the daily lives of students and how science interacts with and influences personal and societal decisions.
Standard IX: The science teacher knows and understands the science content appropriate to teach statewide curriculum in life sciences.

Sciences 7-12 Standards taught:
Domain I: Scientific inquiry and processes
Domain IV – Cell Structure and Processes
Competency 001: *The teacher understands how to select and manage learning activities to ensure the safety of all students and the correct use and care of organisms, natural resources, materials, equipment and technologies.*
Competency 002: *The teacher understands the history of science, how science impacts the daily lives of students and how science interacts with and influences personal and societal decisions.*
Competency 003: *The teacher understands the history of science, how science impacts the daily lives of students and how science interacts with and influences personal and societal decisions.*
Competency 027: *The teacher understands the theory of biological evolution.*
Competency 029: *The teacher understands similarities and differences between living organisms and how taxonomic systems are used to organize and interpret the diversity of life.*
Competency 033: *The teacher understands the relationships between abiotic and biotic factors of terrestrial and aquatic ecosystems, habitats and biomes, including the flow of matter and energy.*
Competency 034: *The teacher understands the interdependence and interactions of living things in terrestrial and aquatic ecosystems.*
Competency 035: *The teacher understands the relationship between carrying capacity and changes in populations*

and ecosystems.
Science Standard I: The Science teacher manages classroom, field and laboratory activities to ensure the safety of all students and ethical care and treatment of organisms and specimens.
Science Standard II: The Science teacher understands the correct use of tools, material, equipment and technologies.
Standard III: The Science teacher understands the process of scientific inquiry and its role in science instruction.
Science Standard VI: The science teacher understands the history and nature of science.
Science Standard VII: The Science teacher understands how science affects the daily lives of students and how science interacts with and influences personal and societal decisions.
Standard IX: The science teacher knows and understands the science content appropriate to teach statewide curriculum in life science.

Students are responsible for following the policies, schedule, and procedures outlined in this syllabus. The syllabus is subject to change in the event of circumstances beyond the instructor's control.