https://wilderness.org/photo-gallery-utahs-bears-ears-region-natural-cultural-treasure

Environmental Science I
ENV-102

Credit Hours: 4
Spring Semester 2022—COVID-19
Cap: 15 students

Instructor:	Steven Chischilly	**Email:**	schischilly@navajotech.edu
	Room 301	**Office Phone:**	786-4147
Office Information:	Mondays, Wednesdays, and Fridays, from 8AM to 930AM; Room 301; Labs on Friday from 9AM to 12 noon	**Home or Cell:**	N/A

Class Location: Science Tech. Building, Room 301—**HYBRID** (Face-to-face and online together)

Meeting Times: Lecture: Mondays and Wednesdays (8AM to 930AM)
Laboratory: Fridays (9AM to 12noon)

Required Materials:

Text(s):

- **Living in the Environment**, by G. Tyler Miller, Seventeenth Edition, Thomson Publishing, ISBN Number: 0495015989. Please note, if you would like to you may also rent your textbooks from the internet at a much lower price.
- **Left Handed: Son of Old Man Hat**, by Walter Dyk. A biography as told by Son of Old Man Hat.
- **Tools**: Calculator**,** removable storage (jump) drive
- **Lab Fee:** $100 per student per semester

Mission Statement

Navajo Technical University's mission is to provide college readiness programs, certificates, associate, baccalaureate, and graduate degrees. Students, faculty, and staff will provide value to the Diné community through research, community engagement, service learning, and activities designed to foster cultural and environmental preservation and sustainable economic development. The University is committed to a high quality, student-oriented, hands-on-learning environment based on the Diné cultural principles: *Nitsáhákees, Nahátá, Íína, Siihasin.*

Course Description:

This course introduces students to environmental science and ecology, they will also obtain knowledge about human population growth, ecology and sustainability, biodiversity, sustaining key resources, sustaining environmental quality, and sustaining human societies. Laboratory is included.

Course Objectives:

- ❖ Use the Scientific Method to carry out an experiment
- ❖ Understand and perform measurements used in statistical analysis of raw data

- ❖ Analyze ecological concepts and theories and verbally explain how energy and nutrients flow through a system
- ❖ Study the laws of thermodynamics, and other ecological concepts such as energy flow through systems, trophic levels, and nutrient cycling.
- ❖ Examine radioactive sources and understand what gamma, beta, and alpha radiation is and how to protect yourself from these sources
- ❖ Explore the periodic table, atomic structure and radioactive decay chain

Course Objectives:

1. Understand what Environmental Science is and how it is different from Ecology, Biology and other sciences
2. Explore current national & global environmental issues and how all things are connected to the environment
3. Understand that humans are affecting the environment and causing changes in levels of atmospheric greenhouse gases
4. Understand concepts regarding ecosystems, plant and animal interactions, and defense mechanisms

COURSE OUTCOMES	**COURSE MEASUREMENTS**
Describe the process of scientific inquiry.	Students complete lab reports, exercises, quizzes, and exams for evaluation.
Solve problems scientifically.	Students are observed for appropriate use of laboratory techniques. Students collect and analyze data that they have obtained from the field and graph the results to show trends, and then calculations are done on these data to show if they are statistically different.
Communicate scientific information.	Students review current research related contemporary environmental issues. Students review and verbally summarize scientific journal articles taken from articles on the NTU library. Weekly written lab reports and semester research project are evaluated.
Apply quantitative analysis to scientific problems.	Students use calculators and computers to calculate and analyze data that has been collected from the field, or otherwise obtained in the classroom lab.
Apply scientific thinking to real world problems.	We, as a class, will discuss real world problems on and off the Navajo Nation, looking long term into the next century and beyond regarding sustainability, biodiversity, carrying capacity and homeostatis.

Grading Plan:

Grading		Grading Scale	
Exams, Quizzes	30%	A	100 – 90
Book Review	10%	B	89 – 80
Lab Reports	25%	C	79 – 70
Homework, Assignments	20%	D	69 – 60
Attendance, Participation	15%	F	59 – below
Total	100%	----------	

Week 1 --Review Syllabus, Textbooks needed, Lab requirements, and Quiz and Exam Schedule; begin chapter 1 in the Miller textbook; Last Day to Add/Drop is Friday. Read and Study Chapter 1, begin Sentences and Definitions homework.
Week 2—Complete chapter 1; Quiz 1 on Wednesday; SOMH Ch 1-3 (on your own), Lab 1--Watch video entitled "Broken Rainbow" on Youtube (2 page summary due by week 3)—This video is Lab 1. Question 7 in Critical Thinking (CT)
Week 3—Begin chapter 2 in Miller book; SOMH Ch. 4-6, Chapter 1 homework is Due (Sentences and Definitions).
Week 4—Finish Chapter 2 in Miller book; Lab 2 on Friday over Ecological Footprint (Online); Lab 1 Due; SOMH Ch. 7-10; QUIZ 2; Question Critical Thinking: Question 1; https://www.footprintcalculator.org/
Week 5—Work on homework for Chapter 2 both terminology and sentences; Lab 3 on Friday-Glaciers; Lab 2 Due on Friday. Review video entitled "An Inconvenient Truth"—Two page summary.
Week 6—Chapter 3 begun; Lab 4-Greenhouse Effect; SOMH 11-13; QUIZ 3
Week 7—Review for Midterm Exam; the exam is comprehensive and 1 page of notes is permissible along with a periodic chart of elements. Lab 5-pH scale; CT 4
Week 8—Finish Chapter 3 Miller; Finish and turn in homework for chapter 3 by Friday; Review for Midterm Exam; the exam is comprehensive and 1 page of notes is permissible along with a periodic chart of elements. Lab 6-Plate Tectonics, QUIZ 4;
Week 9— Start Chapter 4 in Miller; work on homework; If you poison us through chapter 8; Lab 7-Radioactive Dating; CT 3
Week 10—Finish Chapter 4 in the Miller book, homework for Chapter 4 is due on Friday before lab; Lab 8-Fluid Pressure and Flow (Book Review draft may be submitted for review), CT 1, QUIZ 5
Week 11—Chapter 5 in the Miller book, If you poison us read interviews, Lab 9- Black Body Spectrum; CT 3
Week 12—Chapter 6 in the Miller book; Lab 10- Gravity and Orbits; CT 3, QUIZ 6. **Book Review due on Friday at 4pm**.
Week 13—Finish Chapter 6. Lab 11-Molecules and Light
Week 14— Chapter 7; QUIZ 7; CT 3, Lab 12-Gravity Force Lab
Week 15— Chapter 7. BEGIN REVIEWING FOR THE FINAL EXAM; ALL HOMEWORK IS DUE BY FRIDAY OF THIS WEEK (NO LATE HOMEWORK ACCEPTED).
Week 16—Final Exam

Course Policies:

Participation:

Students are expected to attend and participate in all class activities – as listed above, as it is 15% of the grade. Points will be given to students who actively participate in class activities including field trips, laboratories, and ask questions of guest speakers and other presenters.

Cell Phone and Head Phone Use:

- No cell phone use it allowed during class. All cell phones are to be put on silent and placed on the shelf in class. They may be accessed during breaks.
- Head phones are to be removed before coming to class. Headphones are required to listen to anything on the internet in class; do not impede on other students' and faculty freedoms to noise free classroom times.

Lecture Quizzes and Exams:

Quizzes will cover topics from the previous week and will be given bi-weekly unless otherwise instructed. Exams will be given once a section is completed, usually after each chapter unless otherwise instructed. The exams will be comprehensive and will cover the main concepts and ideas covered in lecture and during field trips.

Lab Reports:

Lab reports record all laboratory activities and are due every Friday, the lab reports will cover videos and also online laboratories. Points will be deducted from lab reports submitted after Friday and they must be submitted in a specific format which will covered in class.

Academic Integrity:

Integrity (honesty) is expected of every student in all academic work. The guiding principle of academic integrity is that a student's submitted work must be the student's own. Students engage in academic dishonesty diminish their education and bring discredit to college community. Avoid situations likely to compromise academic integrity such as: cheating, facilitating academic dishonesty, and plagiarism; modifying academic work to obtain additional credit in the same class unless approved in advance by the instructor, Failure to observe rules of academic integrity established by the instructor will cause the student to earn an "F" for the course and they will also be dropped from the course.

Diné Philosophy of Learning:

The Diné Philosophy of Learning is expressed through **nitsáhákees** – thinking; **nahat'á** – planning; **iiná** – living; and **sihasin** – evaluating. We will begin studying the concepts of **níłch'i** – air; **nahasdzáán** – earth; **tó** – water, and how they all interrelate to each other along with living things. We will also study global measures taken to protect **Nahasdzáán Nihimá** - Mother Earth.

Grading Policy

Each student must do his or her own homework and case studies. Discussion among students on homework and cases is encouraged for clarification of assignments, technical details of using software, and structuring major steps of solutions – especially in group assignments in class. Students must do their own work on the homework and exam. Cheating and Plagiarism are strictly forbidden. Cheating includes but is not limited to: plagiarism, submission of work that is not the student's own, submission or use of falsified data, unauthorized access to exam or assignment, use of unauthorized material during an exam, supplying or communicating unauthorized information for an assignment or exam.

Participation

Students are expected to attend and participate in all class activities- as listed above, as it **is 15% of the grade**. Points will be given to students who actively participate in class activities including field trips, laboratories, and ask questions of guest speakers and other presenters.

Cell phone and head phone use

Please turn cell phones off or place them on silent or vibrate mode **before** coming to class. Also, answer cell phones **outside of class** (not in the classroom). Exercising cell phone use courtesy is appreciated by both the instructor and classmates. Headphones are to be removed before coming to class.

Attendance Policy

Students are expected to attend all classes for which they are registered. A percentage of the student's grade will be based on class attendance and participation. Absence from class, regardless of the reason, does not relieve the student of his/her responsibility to complete all course work by the required deadlines. Furthermore, it is the student's responsibility to obtain notes, handouts, and any other information covered when absent from class and to arrange to make up any in-class assignments or tests if permitted by the instructor. Incomplete or missing assignments will necessarily affect the student's grades. Instructors will report excessive and/or unexplained absences to the Counseling Department for investigation and potential intervention. **The Instructor will drop students from the class after three (3) unexcused absences. Only 5 excused absences are allowed, after that time, the student will be dropped from the course.**

Study Time Outside of Class for Face-to-Face Courses

For every credit hour spent in a class, a student is expected to spend two hours (2) outside of class studying the course materials.

Study Time for Hybrid or Blended Courses

For a hybrid or blended course of one (1) credit hour, a student is expected to spend three (3) hours per week studying the course materials.

Study Time for Online Courses

For an online course of one (1) credit hour, a student is expected to spend four hours (4) per week studying the course materials.

Academic Integrity

Integrity (honesty) is expected of every student in all academic work. The guiding principle of academic integrity is that a student's submitted work must be the student's own. Students who engage in academic dishonesty diminish their education and bring discredit to the University community. Avoid situations likely to compromise academic integrity such as: cheating, facilitating academic dishonesty, and plagiarism; modifying academic work to

obtain additional credit in the same class unless approved in advance by the instructor, failure to observe rules of academic integrity established by the instructor.

Diné Philosophy of Education

The Diné Philosophy of Education (DPE) is incorporated into every class for students to become aware of and to understand the significance of the four Diné philosophical elements, including its affiliation with the four directions, four sacred mountains, the four set of thought processes and so forth: Nitsáhákees, Nahát'á, Íína and Siih Hasin which are essential and relevant to self-identity, respect and wisdom to achieve career goals successfully.

Students with Disabilities

The Navajo Technical University and the NTU Science Department are committed to serving all enrolled students in a non-discriminatory and accommodating manner. Any student who feels he/she may need an accommodation based on the impact of disability, or needs special accommodations should inform NTU in accordance with the procedures of the subsection entitled "Students with Disabilities" under Section 7: Student Support Programs, NTU Student Handbook.

Here is the link for the labs:

https://phet.colorado.edu/en/simulations/category/earth-science