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| |  | | --- | | NORTH CENTRAL TEXAS COLLEGE  COURSE SYLLABUS | |

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| --- | --- | --- |
| Course Title: Environmental Biology | | |
| Course Prefix & Number: Biol 2406 | Section Number: 700 | Term Code: Spring 2019 |
| Semester Credit Hours: 4 | Lecture Hours: 48 | Lab Hours: 32 |
| Principles of environmental systems and ecology, including biogeochemical cycles, energy transformations, abiotic interactions, symbiotic relationships, natural resources and their management, lifestyle analysis, evolutionary trends, hazards and risks, and approaches to ecological research. | | |
| Course Prerequisite(s): | | |
|  | | |

**INSTRUCTOR INFORMATION**

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| --- | --- |
| Name of Instructor: | Belinda H. Anderson |
| Campus/Office Location: | Bowie, Room 132 |
| Telephone Number: | (940) 872-4002 ext. 5217 |
| E-mail Address: | banderson@nctc.edu |

**OFFICE HOURS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Monday* | *Tuesday* | *Wednesday* | *Thursday* | *Friday* |
| Bowie | Graham | Bowie | Online |  |
| 12:30-3 | 6:30-7:45 Drive | 10:30-3 | 10-1 |  |
|  | 1-2 |  |  |  |
|  | 2-3:15 Drive |  |  |  |
|  | 3:15-5 Bowie |  |  |  |

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| --- | --- |
| Name of Chair/Coordinator: | **Lisa Bellows Ph.D.** |
| Office Location: | **Gainesville Rm. 408 or 403** |
| Telephone Number: | **940-668-4252** |
| E-mail Address: | **lbellows@nctc.edu** |

**REQUIRED OR RECOMMENDED COURSE MATERIALS**

**Required text** *Required or Recommended Course Materials:*

*Principles of Environmental Science* 8th., Cunningham

ISBN 9780078036071

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**STUDENT LEARNING OUTCOMES** (From Academic Course Guide Manual/Workforce Education Course Manual/NCTC Catalog

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| --- | --- |
| *At the successful completion of this course the student will be able to:* | |
|  | **Lecture Learning Outcomes**   1. Explain the structure and impact of biogeochemical cycles. 2. Describe energy transformations across trophic levels. 3. Illustrate abiotic/biotic interactions and symbiotic relationships. 4. Identify various types of natural resources, human impact on these resources, and common resource management practices. 5. Quantify and analyze the impact of lifestyle on the environment. 6. Depict evolutionary trends and adaptations to environmental changes. 7. Describe environmental hazards and risks and the social and economic ramifications. 8. Describe ecological and statistical techniques and approaches used in the study of environmental biology.   **Lab Learning Outcomes**  Upon successful completion of this course, students will:   1. Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data. 2. Use critical thinking and scientific problem solving to make informed decisions in the laboratory. 3. Communicate effectively the results of scientific investigations. 4. Explain the structure and impact of biogeochemical cycles. 5. Describe energy transformations across trophic levels. 6. Illustrate abiotic/biotic interactions and symbiotic relationships. 7. Identify various types of natural resources, human impact on these resources, and common resource management practices. 8. Quantify and analyze the impact of lifestyle on the environment. 9. Depict evolutionary trends and adaptations to environmental changes. 10. Describe environmental hazards and risks and the social and economic ramifications. 11. Describe ecological and statistical techniques and approaches used in the study of environmental biology. |

**COURSE REQUIREMENTS, EVALUATION METHODS AND GRADING CRITERIA**

**GRADING CRITERIA**

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| --- | --- | --- |
| **# of Graded Course Elements** | **Graded Course Elements** | **Percentage or Point Values** |
| 3 | Lecture Exams @ 150 points each | 450 |
| 4 | Lab Exercises | 250 |
| 3 | Project Grades | 300 |
|  | Total Point Value | 1000 |

90% of total possible points=A, 80%=B, 70%=C, 60%=D and below 60%=F

Final grades will be determined on the basis of academic performance in both lab and lecture.

Exams will be evaluated and grades determined as quickly as possible and posted on Canvas. Grades WILL NOT be given out over the phone, nor will grades be discussed with any individual other than the student.

**Attendance is required**. Students are expected to log in at least once a week. Nine hours of absence from class/lab may result in dismissal from this course.

**Tentative Schedule**

**COURSE SUBJECT OUTLINE** (Major Assignments, Due Dates, and Grading Criteria)

**Week of**  **Chapter**

|  |  |
| --- | --- |
| 01/21-01/23 | Syllabus on Wednesday |
| 01/28-01/30 | 1-2 |
| 02/04-02/06 | 2-3 |
| 02/11-02/13 | 3-4 |
| 02/18-02/20 | 4-5 |
| 02/25-02/27 | **Exam**, 6 |
| 03/04-03/06 | 6, Slum Tourism |
| 03/11-3/13 | Spring Break |
| 03/18-03/20 | 7 |
| 03/25-03/27 | 8 |
| 04/01-04/03 | 9-10 |
| 04/08-04/10 | 11 |
| 04/15-04/17 | **Exam 2,** 12 |
| 04/22-04/24 | 12-13 |
| 04/29-05/01 | 13-14 |
| 05/06-05/08 | 14, **Exam 3** |

**Project List**

**Due Date Possible Points**

- Photo Ops (10 good/10 bad) 03/04 100

-Environmental Current Event Folder 04/29 100

- Wildflower Photo Collection (20 specimens) 05/01 100

**Photo Ops**

-The Photo Ops should include pictures of 10 “good” environmental practices and 10 “bad” environmental practices. Include a description with each picture detailing why the practice is good or bad for the environment. The 10 “bad” pictures should also include solutions to mitigate the bad situation. The pictures should **NOT** come from the internet, magazines etc. but should be pictures of environmental practices that you have seen taking place in “your own” environment. The photo ops should be placed in a folder. The project will be graded as follows:

|  |  |
| --- | --- |
| Possible  Points | Section |
| 5 | Arial or Times Roman 12 font or less with ½” or .5” margins all around |
| 5 | Spelling and grammar must be correct |
| 30 | Positive observations and summary of each observation |
| 30 | Negative observations and summary of each observation |
| 30 | Mitigations for negative observations |
|  | **TOTAL POINTS 100** |

**Wildflower Photo Collection**

-The Wildflower Photo collection should include pictures of 20 **native Texas** wildflowers. Each flower represented should have 2 pictures: 1) the whole plant in bloom and 2) a close up that clearly shows the bloom and leaves.

-Each flower represented should include the following description plate; scientific name (genus/species), common name, collection site, time of year, time of day collected, ambient temperature and site conditions.

|  |  |
| --- | --- |
| Scientific Name |  |
| Common Name |  |
| Collection Site |  |
| Time of Year |  |
| Time of Day Collected |  |
| Ambient Temperature |  |
| Site Conditions |  |

-Must be typed

-A folder should be used.

-Reference books for identification can be found in the library. Final identification results will be based on the reference manual: *Illustrated Flora of North Central Texas by Shinners and Mahlers*

-The project will be graded as follows:

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| --- | --- |
| Possible  Points | Section |
| 20 | Inclusion of 20 **native Texas wildflowers** |
| 60 | Proper identification |
| 20 | Proper use of description plate |
|  | **TOTAL POINTS 100** |

**Environmental Current Event Folder**

A folder of environmental current events will be kept throughout the semester. Your folder is to contain 1) your dated (within 2 weeks of the class date for the topic) current event reference information with title, 2) a one page abstract of the information contained from each of 12 environmental current events, 3) follow the format on the next page. Do not include the actual article in the folder. Your current events should come from reputable journals, newspapers, magazines or internet sources and reflect the information we are covering each week. You may not use **Wikipedia**. Your articles should include 2 international/global, 2 national (can include Texas) and 2 local (50 mile radius of NCTC) events. The balance can come from your pick of global, national or local events. The reports should be put in the bracts in a 3 bract **paper** pocket folder. You may use a neat **used** folder. I also have **some** used folders you may have. The folders are due **April 29** at the beginning of class. No late folders will be accepted. Every effort will be made to spend part of class time each Monday discussing your current events. Students will be randomly selected each week to share their current event with class discussion to follow. The folder project is worth a total of 100 points out of the class/lab total of 1000 points. You will be graded on participation in discussion, neatness and completeness of your folder, attention to detail and following directions. It is **required** that you **type** your current event information, including the abstract. An abstract is a brief synopsis of the information contained in the article. The following is a schedule of the topics we will cover each week that should be reflected in your current events folder.

01/28 None Due

02/04 Ecological niches, Species interactions, Keystone species

02/11 Human populations

02/18 Biomes, Biodiversity, invasive species

02/25 You Pick

03/04 Debt for nature swaps, National forests, parks and grasslands, ecotourism

03/18 Famine, erosion, Genetically Modified Organisms (GMO), green revolution, sustainable agriculture

03/25 Environmental Health, Zoonotic diseases

04/01 Climate change, air pollution

04/08 Water resources

04/15 Geologic hazards

04/22 Energy, light pollution

04/29 Solid waste, hazardous waste, slum tourism

**The current event folder will be graded as follows:**

-Participation in class discussion 10 points

-Cover page 5 points

-Name and Class on folder 5 points

-Typed 5 points

-Collectively: 6.25 points for each of 12 topics

Date 1.25 points

Abstract 1.25 points

Format 1.25points

Location 1.25points

Neatness 1.25points

Total Points: 100

**Instructions for Current Events Folder**

Name and class period on front of folder

**Page 1** Cover Page (include name and class period)

**Page 2**… Current Event Abstract Pages for each of the 12 current events as follows:

1. Student Name: Belinda H. Anderson

Date Due: 02/04/19

Topic: Species Interaction

Title: “Freshwater Fish in N. America in Peril, Study Says” by Seth Lee

Source: The Mercury News ([www.mercurynews.com](http://www.mercurynews.com)) Vol. 3, Page 23

Date of Article: 01/20/19

Location: National

Abstract:

In the article “Freshwater Fish in N. America in Peril, Study says,” scientists spoke of the current issues involving freshwater fish in North America…. The abstract should be a brief synopsis of the information contained in the article. I should be able to read the abstract and have a good knowledge of what the article is about without having to look up the article. **Do not include the actual article in your folder!!**

1. Student Name: Belinda H. Anderson

Date Due: 02/11/19

Topic: Human Populations

# Title: Epigenetic changes promote development of fatty liver in mouse and human

Source: https://www.sciencedaily.com/releases/2018/01/170109102447.htm

Date of Article: 02/09/19

Location: National

Abstract:

Mice with a strong tendency to obesity already exhibit epigenetic changes at six weeks of age, inducing the liver to amplify its production of the enzyme DPP4 and release it into the circulation. Over the long term, this favors the development of a fatty liver. Such changes in DNA methylation are also detectable in humans with fatty liver and suggest a similar causal chain**. I copied this from the site…you are to write your own summary!!**

Biol 2406

Environmental Science **Lab Syllabus**

Your lab grade will be worth 250 points out of the 1000 total points for the class. Participation is **very** important.

Participation papers 90 pts.

National Park Contest 35 pts.

Vermiculture Report 75 pts.

Bowie Elementary Presentation 50 pts

The following is a very tentative schedule and will be modified throughout the semester.

1/30 **Microscope Usage**

2/06 Vermiculture (Worm Bin setup)

2/13 **Ecological Footprints**/ Start Potatoes

2/20 **Owl Pellet Study**

2/27 **Wildflower Collection Techniques**

3/06 National Park Contest

3/20 **How We Eat**/ Potato Progress

3/27 **Light Pollution** Study

4/03 Work on Bowie Elementary Project

4/10 **Water/Sewage Treatment Plant Tour**

4/17 **Plastics Study**

4/24 **Agrihoods**

5/01 Harvest Worms/ Potato harvest

5/08 Vermiculture Report due

**Bowie Elementary Presentation** will consist of:

* A 20 to 30 minute presentation made to Bowie Elementary 2nd graders on an environmental topic picked by the 2nd grade teachers. You will be given criteria you must include in your presentation. You will be graded on proper inclusion of the criteria, enthusiasm, age appropriateness, representation of NCTC and use of visual aids. The presentation will be on a Monday or Wednesday afternoon between 12:30 and 2:30. Since this is not during a regularly scheduled class period for us you will need to check your schedule as to your availability. If you have a conflict please get with me as soon as possible for an alternative project.

**Participation papers** will consist of:

* A typed summary (no more than 1 page) of each of the following labs will be due the class period following the lab (each is worth up to 10 points):

Microscope Usage, Ecological Footprints, Wildflower Collection Techniques, Light Pollution, How We Eat, Owl Pellet study, Water/ Sewage Treatment Plant tour, Plastics and Agrihoods.

**Vermiculture Reports** should consist of:

-Abstract (brief synopsis of the overall project) (15pts)

- Introduction (introduces the topic/ why you did the project/why the topic is pertinent to environmental science) (10pts)

-Materials and Methods (explains how you did the project) (15pts)

-Results (explains what you found out) (15pts)

-Conclusion (your interpretation of the results) (15pts)

-Data tables/graphs/spreadsheets/pie charts etc. to back up your results (5pts)

Length is not important—Quality is! The reports will be graded on attention to details and accuracy of the data that you kept. If anyone could pick up your report, read it and understand the complete project you will have done your job. **The use of references in your introduction and conclusion are required.**

**No classes Martin Luther King Day, January 21th.**

**Last day to Drop class with a W, April 4th.**

**Spring Break March 11-16**

**Finals Week May 11th -16th**

**ATTENDANCE POLICY**

Regular and punctual attendance is expected of all students in all classes for which they have registered. All absences are considered to be unauthorized unless the student is absent due to illness or emergencies as determined by the instructor. It is the student responsibility to provide documentation as to the emergency for approval and judgement by the faculty member. Approved college sponsored activities are the only absences for which a student should not be held liable and only when provided by a college official ahead of the absence. Valid reasons for absence, however, do not relieve the student of the responsibility for making up required work. Students will not be allowed to make up an examination missed due to absence unless they have reasons acceptable to the instructor. A student who is compelled to be absent when a test is given should petition the instructor, in advance if possible, for permission to postpone the exam. Student will be dropped from a class by the Registrar upon recommendation of the instructor who feels the student has been justifiably absent or tardy a sufficient number of times to preclude meeting the course’s objectives. Persistent, unjustified absences from classes or laboratories will be considered sufficient cause for College officials to drop a student from the rolls of the College. From Board Policy FC (LOCAL)

Last day to withdraw from a course with a “W” is \_\_\_\_\_April 4, 2019\_\_\_\_\_\_\_\_.

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**DISABILITY SERVICES** (Office for Students with Disabilities)

The Office for Students with Disabilities (OSD) provides support services for students with disabilities, students enrolled in technical areas of study, and students who are classified as special populations (i.e. single parents).

Support services for students with disabilities might include appropriate and reasonable accommodations, or they may be in the form of personal counseling, academic counseling, career counseling, etc. Furthermore, OSD Counselors work with students to encourage self-advocacy and promote empowerment. The Counselors also provides resource information, disability-related information, and adaptive technology for students who qualify.

If you feel you have needs for services that the institution provides, please reach out to either Wayne Smith (940) 498-6207 or Yvonne Sandman (940) 668-3300. Alternative students may stop by Room 170 in Corinth or Room 111 in Gainesville.

**CORE CURRICULUM FOUNDATIONAL COMPONENT AREA** (For classes in the Core)\_\_\_\_\_\_\_\_

 Communication

 Mathematics

X Life and Physical Science

 Language, Philosophy & Culture

 Creative Arts

 American History

 Government/Political Science

 Social and Behavioral Sciences

 Component Area Option

**REQUIRED CORE OBJECTIVES** (For classes in the Core)

X Critical Thinking

X Communication

X Empirical and Quantitative

X Teamwork

 Personal Responsibility

 Social Responsibility

**COURSE TYPE**

X Academic General Education Course (from ACGM but not in NCTC Core)

**X** Academic NCTC Core Curriculum Course

**** WECM Course

**STUDENT HANDBOOK**

Students are expected to follow all rules and regulations found in the student handbook and published online.

**ACADEMIC DISHONESTY**

Scholastic dishonesty shall include, but is not limited to cheating, plagiarism, academic falsification, intellectual property dishonesty, academic dishonesty facilitation and collusion. Faculty members may document and bring charges against a student who is engaged in or is suspected to be engaged in academic dishonesty. See Student Handbook, “Student Rights & Responsibilities: Student Conduct ([FLB(LOCAL)]”.