

**Biology 2405 Plants and People (4 credits)
Spring 2021 Sul Ross State University**

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Office Hours: Online Tues/Thurs 10:00am – 11:00am & by appt
Lecture Time: TR 8:00 am -9:15 am WSB 204
Lab Time: M 1:00 pm - 2:50 pm WSB 204

TEXTBOOK:

Levetin, E., & McMahon, K. (2008). *Plants & Society*. Boston: McGraw-Hill Higher Ed. **[OPTIONAL]**

Course Description. The course explores the economic and agricultural importance of plants to people. Topics include the roles of plants as sources of food, shelter, fiber, and medicines, as well as the cultural and historical aspects of economic botany, and will instill an appreciation of our connection with plants.

Course Objectives.

1. Recognize the varied uses of plants in human affairs.
2. Relate the geographic origins of useful plants to their current geographic distributions.
3. Analyze tendencies of types of useful materials to occur in specific families of plants.
4. Develop a command of scientific names and common names of useful plants and distinguish the strengths and weaknesses of these different types of nomenclature.
5. Describe key processes used to convert raw plant material to more useful forms (e.g., the processes involved in converting the seeds of wheat plants into baked bread).
6. Understand the relationship between toxic and therapeutic effects of medicinal plants.

Grading.

Journal	100
Open-Journal Midterm Exam	100
People and Plants Project	100
Peer Teaching	100
Significant Plant Essay	100
Self-directed Field Exercises	100
<u>Lab Exercises</u>	<u>70</u>
Total	670

Journal (100 points) *Purchase a 3-ring binder and loose-leaf paper for your journal.*

Your journal is a critical component to your success in this course and must contain these major components:

- **Front-Line Entries:** These entries should be an ongoing record of thoughts and details that you capture in class, on field trips, and at home. These entries should include notes (or re-written notes) that you take during mini lectures in class, classroom discussions, and class activities; notes, questions, and discussion topics that you compile on assigned readings; notes and observations that you take while on field trips; and ideas and connections that you may brainstorm related to the class at various times. These front-line journal entries will be extremely valuable to you when it comes to your open-journal midterm exam and other course assignments that will be required of you throughout the semester.
- **Writing Prompts:** You will complete approximately 10 entries throughout the course of the semester that will be in response to specific instructions or writing prompts that I will give to you. In these entries you will be asked to reflect upon the weekly required readings or activities, synthesize course concepts, and/or reflect upon or complete assignments related to field experiences.

I will be looking for proof that you have been deeply engaged and have been thinking critically about the course material, activities, and experiences throughout the semester. I will also be looking to see that you are making critical connections between your course readings, field exercises, and classroom discussions, activities, and experiences. When you are writing entries about course readings, I highly suggest that you cite, refer to, and quote specific and relevant parts of the readings, lectures, films, etc. As a rule, try to be as specific and concrete as possible when writing your journal entries.

Open-Journal Midterm Exam (100 points)

You will have the opportunity to demonstrate your learning via an in-class midterm exam. During this exam, you will be able to consult your journal.

People and Plants Project (100 points)

You will create something from scratch using plants – for example, paper, remedies, dyes, etc. This project is ultimately designed to give you hands-on experience with the economic, cultural, and/or historical uses of plants. This is a chance for you to be creative and choose to learn about something in which you are interested. In addition to creating the item(s), you will also be required to research the historical & cultural foundations and to share your experiences and knowledge gained with the class.

Peer Teaching: Key Topics Related to People and Plants (100 points)

The best way to learn the subject is to *teach* the subject. You will teach your peers via short presentations about key and interesting topics. A list of subjects will be provided.

Significant Plant Essay (100 points)

You will write an essay about a significant plant in your life and explain in detail why you chose the plant. In addition, you will do detailed research about this plant and be expected to reflect on readings, discussions, field exercises, etc. in your essay.

Self-Directed Field Exercises (4 @ 25 points each = 100 points)

You will be required to complete four self-directed field exercises (25 points each). Detailed instructions will be given during class. Any notes you take during these “field trips” should be included in your journal.

Lab Exercises (70 points)

Seven 10-point exercises will be assessed during weekly labs.

Semester Schedule. ***The class schedule is tentative and subject to change.*

WEEK	DATE	Lecture Topic	Lab Dates
1	Jan 12	Introduction	M Jan 11 Lab Exercise #1
	Jan 14	Plant Structure	
2	Jan 19	Anatomy of Plants; Plant Taxonomy	NO LAB - MLK Day
	Jan 21	Cloning & Plant Development	
3	Jan 26	Flowers to Fruit	M Jan 25 Lab Exercise #2
	Jan 28	Plant Biotechnology	

4	Feb 02	Genetically Modified Plants	M Feb 01 Lab Exercise #3
	Feb 04	Human Nutrition from Plants	
5	Feb 09	Origin of Agriculture	M Feb 08 Self-Directed Field Trip
	Feb 11	The Grass Family	
6	Feb 16	Legumes	M Feb 15 Lab Exercise #4
	Feb 18	Starchy Staples	
7	Feb 23	The Spice Trade	M Feb 22 Self-Directed Field Trip
	Feb 25	Stimulants	
8	Mar 02	Midterm Exam	M Mar 01 Lab Exercise #5
	Mar 04	Current Topic	
9	Mar 08-12	SPRING BREAK -- NO CLASSES	
10	Mar 16	Plants to Dye For	M Mar 15 Self-Directed Field Trip
	Mar 18	Genetically Modified Foods	
11	Mar 23	Cloth, Paper and Wood	M Mar 22 Lab Exercise #6
	Mar 25	Medicinal Plants	
12	Mar 30	Psychoactive Plants	M Mar 29 Self-Directed Field Trip
	Apr 01	World Biomes; <i>Last day to withdraw with a "W."</i>	
13	Apr 06	Peer Teaching	M Apr 05 Lab Exercise #7
	Apr 08	Peer Teaching	
14	Apr 13	Presentations	M Apr 12 Presentations (Last lab meeting)
	Apr 15	Presentations	
15	Apr 20	Current Topics and Readings	
	Apr 22	Current Topics and Readings	
16	Apr 27	Wrap-up and Review	
	Apr 29	SRSU STUDY DAY -- NO CLASSES	
17	May 05	FINAL EXAM 8:00 AM – 10:00 AM	

STUDENT LEARNING OUTCOMES (SLOs)

The graduating biology student graduating with a BS in Biology should be able to:

- 1) The student will be able to demonstrate an understanding of basic biological concepts, including but not limited to evolution via natural selection, cell theory, and the role and function of DNA.
- 2) The student will be able to demonstrate utilization of various field techniques toward addressing scientific questions in the specific discipline. These field techniques can include, but are not limited to, plant collection and processing, various animal collection techniques, ecological surveying and sampling, and biodiversity indexing.
- 3) The student will be able to use biological instrumentation to solve biological problems using standard observational strategies.
- 4) The student will develop writing skills by summarizing and critiquing recent relevant biological literature.

CORE OBJECTIVES ADDRESSED:

- 1) **Communication Skills** – Students will effectively communicate the results of scientific investigations, using oral, written, and visual communication, either in group discussions or on written exams.
- 2) **Critical Thinking Skills** – Students will include creative thinking, innovation, inquiry, and analysis required to relate new information with previous information in a way that demonstrates the diversity and similarity due to evolutionary ancestry.
- 3) **Empirical and Quantitative Skills** – Students will use basic math skills to solve problems (e.g. related to genetic outcomes, cellular energy production, and probability) resulting in informed conclusions.
- 4) **Teamwork Skills** – Students will work effectively with others to support a shared goal during lab sessions on activities, such as dissections, problem solving, and other experimental procedures.

MARKETABLE SKILLS: A student getting a degree in the Biological sciences would be expected to acquire the following marketable skills by graduation.

- 1) Students will be able to organize, analyze, and interpret data.
- 2) Students will be proficient at using presentation software.
- 3) Students will acquire experience in managing time and meeting deadlines.
- 4) Students will gain the ability to speak effectively and write concisely about scientific topics.
- 5) Students will acquire experience and guidance in the development of professional email correspondence.

ADA Statement: Sul Ross State University is committed to equal access in compliance with the Americans with Disabilities Act of 1973. Students with qualifying disabilities who seek accommodations must initiate a request for a meeting for accessibility services. Students seeking accessibility services must contact Rebecca Greathouse Wren, M.Ed., LPC-S, Counseling & Accessibility Services, Telephone: 432-837-8203, or email: rebecca.wren@sulross.edu. For more information see: <https://www.sulross.edu/page/1384/accessibility-services>

SRSU Library Services. The Sul Ross Library offers FREE resources and services to the entire SRSU community. Access and borrow books, articles, and more by visiting the library's website, library.sulross.edu. Off-campus access requires your LoboID and password. Check out materials using your photo ID. Librarians are a tremendous resource for your coursework and can be reached in person, by email (srsulibrary@sulross.edu), or phone (432-837-8123).

COVID-19. Sul Ross aims to do our part to prevent further spread of the novel coronavirus SARS-CoV-2. A mandatory campus-wide mask policy is in place, given the high level of contagion of this coronavirus and the implications of its disease COVID-19. Following guidelines from the Centers for Disease Control, face masks can be cloth and must cover your nose and mouth. Masks must be always kept on during classes and within all public places in campus buildings as part of this community-wide effort to prevent more spreading of COVID-19. Failure to do so will be treated as a class disruption, per the Student Handbook.

BIOL 2405 Educator Standards. For students seeking certification, this course will cover aspects of the following SBEC educator standards and competencies for Science EC-6 Standard IV:

Competency 001 (Lab Processes, Equipment and Safety): *The teacher understands how to manage learning activities, tools, materials, equipment and technologies to ensure the safety of all students.* A,B,C,E,F

Competency 002 (History and Nature of Science): *The teacher understands the history and nature of science, the process and role of scientific inquiry and the role of inquiry in science instruction.* A,H,J,M,N,P

Competency 003 (Impact of Science): *The teacher understands how science impacts the daily lives of students and interacts with and influences personal and societal decisions.* A,Q,R,S,T,U

Competency 004 (Concepts and Processes): *The teacher knows and understands the unifying concepts and processes that are common to all sciences.* D,F,G,H

Competency 005 (Students as Learners and Science Instruction): *The teacher has theoretical and practical knowledge about teaching science and about how students learn science.* A,B,C,E,F,G,H

Competency 006 (Science Assessment): *The teacher knows the varied and appropriate assessments and assessment practices for monitoring science learning in laboratory, field and classroom settings.* B,C,D

Competency 010 (Energy Transformations and Conservation): *The teacher understands energy transformations and the conservation of matter and energy.* F

Competency 011 (Structure and Function of Living Things): *The teacher understands the structure and function of living things.* H,I

Competency 014 (Organisms and the Environment): *The teacher understands the relationships between organisms and the environment.* B,E