

## Biology 3300 – Survey of Basic Sciences

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Office hours: by appointment. Group appointments welcome too.

**Required Texts:** Tolman, Marvin N. 2002. *Discovering Elementary Science: Methods, Content and Problem-Solving Activities*, 3<sup>rd</sup> Ed. Allyn & Bacon, Boston, MA 560 pp.  
Wikibooks.org Look for [Science: An Elementary Teacher's Guide](#)

**Student Learning Outcomes:** There are six broad goals for this course:

- Basic Survey of Sciences students will review teaching theories and methodologies of elementary instruction as they pertain to elementary science.
- Basic Survey of Sciences students will know and comprehend such basic physics principals as light, sound, energy, matter, electricity and magnetism after discussions of such topics.
- Basic Survey of Sciences students will know and comprehend such basic Earth science subjects as weather, seasons, climate, and plate tectonics after discussions of such topics.
- Basic Survey of Sciences students will know and comprehend basic categorization and organization of animal life, after discussions of such topics.
- Basic Survey of Sciences students will know and comprehend basic categorization and organization of plant life, after discussions of such topics.
- Basic Survey of Sciences students will know and comprehend basic organization and functioning of the human body, after discussions of such topics.

**Attendance:**

This is an online course. I will provide some instructional videos to explain topics, and I will communicate by sending out announcements over Blackboard. You are encouraged to use as many resources as you find useful for learning the material. You are encouraged to email the instructor and/or participate in discussion boards on Blackboard. You are encouraged to work with each other if you find that useful. Material for the exams will come largely from my lectures, notes and textbook and assigned web page readings, so it is in your best interest to participate in class.

## Tentative Lecture Schedule

(Note: exact dates are subject to change; be sure to keep abreast of changes).

For summer the course is greatly compressed. What normally takes 3 weeks will be done in 1.

### UNIT 1—THEORY & METHODOLOGY

In this section the following Science Generalist Standards will be addressed:

The science teacher:

- Standard I:** manages classroom, field & laboratory activities to ensure the safety of all students & the ethical care & treatment of organisms & specimens
- Standard III:** knows & understands the process of scientific inquiry & its role in science instruction
- Standard IV:** has theoretical & practical knowledge about teaching science & about how students learn science
- Standard V:** knows the varied & appropriate assessments & assessment practices to monitor science learning

Introduction, Syllabus, Principles of Learning	Chapter 1 & 2
Problem Solving & Research	Chapter 3
Questioning	Chapter 4

**Exam 1 (Chapters 1-4) Thursday, July 14, 5:00 PM** at the computer lab of your campus

### UNIT 2—CONTENT & PROBLEM SOLVING

#### SECTION 1 – PHYSICAL SCIENCES

In this section the following Science Generalist Standards will be addressed:

The science teacher knows & understands:

- Standard VI:** the history & nature of science
- Standard VII:** how science affects the daily lives of students & how science interacts with & influences personal & societal decisions
- Standard VIII:** the science content appropriate to teach the statewide curriculum skills (TEKS) in physical sciences
- Standard XI:** the unifying concepts & processes that are common to all sciences

Energy & Matter	Chapter 13
Heat	Chapters 14
Light & Electromagnetic spectrum	Chapter 15

**Exam 2 (Chapters 13, 14 & 15) Thursday, July 21, 5:00 PM** at the computer lab of your campus

Sound	Chapter 16
Electricity and Magnetism	Chapter 17
Machines	Chapter 18

**Exam 3 (Chapters 16, 17, & 18) Thursday, July 28, 5:00 PM** at the computer lab of your campus

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## SECTION 2 – EARTH & SPACE SCIENCE

In this section the following Science Generalist Standards will be addressed:

The science teacher knows & understands:

- Standard II:** the correct use of tools, materials, equipment & technologies
- Standard VI:** the history & nature of science
- Standard VII:** how science affects the daily lives of students & how science interacts with & influences personal & societal decisions
- Standard X:** the science content appropriate to teach the statewide curriculum skills (TEKS) in Earth & space science
- Standard XI:** the unifying concepts & processes that are common to all sciences

The Environment	Chapter 9
Weather, Seasons & Climate	Chapter 19
The Earth	Chapter 20

**Exam 4 (Chapters 9, 19, 20) Thursday, August 4, 5:00 PM** at the computer lab of your campus

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## SECTION 3-LIFE SCIENCES

In this section the following Science Generalist Standards will be addressed:

The science teacher knows & understands:

- Standard VI:** the history & nature of science
- Standard VII:** how science affects the daily lives of students & how science interacts with & influences personal & societal decisions
- Standard IX:** the science content appropriate to teach the statewide curriculum skills (TEKS) in life science
- Standard XI:** the unifying concepts & processes that are common to all sciences

Animals	Chapter 10
Plants.	Chapter 11
The Human Body	Chapter 12

**Final Exam (50% Chapters 10, 11 & 12; 50% Comprehensive)**

**Thursday, Aug 11, 5:00 pm – 7:00pm** at the computer lab of your campus

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### Grade assessment:

There will be **4 lecture** examinations. These four lecture exams will each be worth 100 points. Additionally, there will be a mandatory comprehensive final exam worth 150 points.

### Extra:

In addition to the tests, you are invited to improve this class for the benefit of others. You may do this in any of the following ways: 1) You can help in writing and editing the wikibook, which will become the new textbook in Jan 2017. 2) You can create improved PowerPoint slides for any concept (you do not need to cover an entire chapter—just focus on one concept at a time). 3) You can write multiple-choice questions that will help drive learning. I would like at least one

*meaningful* contribution per week (1 contribution per week for 5 weeks will count more than 5 contributions made during the last week). These efforts will count as extra to help your final grade. Not doing these will not hurt your grade, but you can increase your final grade by up to 25 points (almost 5%) if you have been helping improve the course. Which activities should you choose? Whatever you think will help you understand the material better and will help future students understand the material better. This is an alternative activity to demonstrate your knowledge and learning and to help teach future students.

Therefore, there are a total of 550 possible points during this course:

4 regular semester exams	400
Final exam	150
Total	550
<u>Extra Credit</u>	<u>(5-25 points)</u>

Your final grade in this course will be determined by the cumulative number of points you earn. Your final grade will be determined by the following scale:

<u>Percent</u>	<u>Letter Grade</u>
90 – 100%	A
80 – 89.9%	B
70 – 79.9%	C
60 – 69.9%	D
< 60%	F

Questions will be drawn from information presented in lecture, information from your textbook, and through additional assigned websites and readings (see Assignments section of Blackboard). Exam questions will be multiple choice questions. No notes, books, cell phones, or other materials will be allowed during the exam. I will provide an English dictionary for your use if necessary. If you are an ESL student, please contact me to make arrangements for use of foreign language dictionaries and translators.

**Study Tips:**

Everyone has their own unique way of learning. How you study may have a larger impact on your learning than how much you study. If you use all the resources available to you and take an active role in the learning process you will likely do much better.

Some specific tips are:

- Spend 15 – 20 minutes to skim through each reading assignment before class.
- Review the lecture notes and read the assigned reading
- Try to draw diagrams from lecture and the book from memory
- Make flash cards or important concepts and terms
- Call up a friend and try to explain what you have learned in class
- ASK QUESTIONS! You are not in this class alone, if you don't understand something, more than likely your classmates also don't understand.
- Watch the video lectures I will provide and give me feedback whenever you are confused.

**Disabled Students:**

Sul Ross State University is committed to equal access in compliance with the Americans with Disabilities Act of 1973. It is the student's responsibility to initiate a request for accessibility

services. Students seeking accessibility services must contact Mary Schwartz, M. Ed., L.P.C., in Counseling and Accessibility Services, Telephone: 432-837-8691. E-mail: mschwartz@sulross.edu

### **Academic Honesty:**

Cheating will not be tolerated. The University expects all students to engage in all academic pursuits in a manner that is above reproach and to maintain complete honesty and integrity in the academic experiences both in and out of the classroom. "Cheating" includes, but is not limited to:

- Copying from another student's test paper, a laboratory report, other report, or computer files, data listings, and/or programs.
- Using, during a test, materials not authorized by the person giving the test.
- Collaborating, without authorization, with another person during an examination or in preparing academic work.
- Knowingly, and without authorization, using, buying, selling, stealing, transporting, soliciting, copying, or possessing, in whole or in part, the contents of an unadministered test.
- Substituting for another student; permitting any other person; or otherwise assisting any other person to substitute for oneself or for another student in the taking of an examination or test or the preparation of academic work to be submitted for academic credit.
- Bribing another person to obtain an unadministered test or information about an unadministered test.
- Purchasing, or otherwise acquiring and submitting as one's own work any research paper or other writing assignment prepared by an individual or firm. This section does not apply to the typing of the rough and/or final versions of an assignment by a professional typist.

Plagiarism will not be tolerated. "Plagiarism" means the appropriation and the unacknowledged incorporation of another's work or idea into one's own work offered for credit. This includes verbatim written answers by colleagues with whom you might discuss laboratories exercises. Plagiarism also includes copying information from internet resources. To avoid plagiarism, make sure you always use your own words to construct your written answers.

*Distance Education Statement:* Students enrolled in distance education courses have equal access to the university's academic support services, such as Smarthinking, library resources, online databases, and instructional technology support. For more information about accessing these resources, visit the SRSU website. **Students should correspond using Sul Ross email accounts** and submit online assignments through Blackboard, which requires secure login information to verify students' identities and to protect students' information. **All exams will be proctored and must be taken in the computer lab of one of the Sul Ross Rio Grande computer labs:** The procedures for filing a student complaint are included in the student handbook. Students enrolled in distance education courses at Sul Ross are expected to adhere to all policies pertaining to academic honesty and appropriate student conduct, as described in the student handbook. Students in web-based courses must maintain appropriate equipment and software, according to the needs and requirements of the course, as outlined on the SRSU website.