

Biology 3300 – Survey of Basic Sciences Spring 2020

Instructor: Dr. Dan H. Foley III
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Office hours: Monday - Thursday: 10:30am – 12:00 noon
Friday: by appointment

Required Texts: Tolman, Marvin N. 2002. Discovering Elementary Science: Methods, Content and Problem-Solving Activities, 3rd Ed. Allyn & Bacon, Boston, MA 560 pp.

Course Objective: 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 upper division college course. You are an adult, and you paid for this course. I will not be taking roll call. However, 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 date are subject to change, be sure to keep abreast of changes).

Date	Topic	Readings
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UNIT 1—THEORY & METHODOLOGY

During the following 3 weeks 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 student learn science
- Standard V:** knows the varied & appropriate assessments & assessment practices to monitor science learning

Week 1			
Jan. 13 – Jan. 17	Intro, Syllabus, Principles of Learning	Principles of Learning	Chapters 1 & 2 Chapters 2
Week 2			
Jan. 20 – Jan. 24	Problem Solving & Research		Chapter 3
Week 3			
Jan. 27 – Jan. 31	Questioning		Chapter 4

UNIT 2—CONTENT & PROBLEM SOLVING

SECTION 1 – PHYSICAL SCIENCES

During the following 6 weeks 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

Week 4			
Feb. 3 – Feb. 7	Monday Feb. 3rd Exam I-(Chapters 2, 3, & 4)	Energy & Matter	Chapter 13
Week 5			
Feb. 10 – Feb. 14	Heat		Chapter 14
Week 6			
Feb. 17 – Feb. 21	Light & Electromagnetic spectrum		Chapter 15

Week 7	Feb. 24 – Feb. 28	Monday Feb. 24th Exam II-(Chapters 13, 14 & 15)	
		Sound	Chapter 16
Week 8	March 2 – March 6	Electricity and Magnetism	Chapter 17
Week 9	March 9 – March 13	<i>Spring Break – No Classes</i>	

SECTION 2 – EARTH & SPACE SCIENCE

During the following 3 weeks 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

Week 10	March 16 – March 20	Machines	Chapter 18
Week 11	March 23 – March 27	Monday March 23rd Exam III-(Chapters 16, 17 & 18)	
		The Environment	Chapter 9
Week 12	March 30 – April 3	Weather, Seasons & Climate	Chapter 19

SECTION 3-LIFE SCIENCES

During the following 3 weeks 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

Week 13	April 6 – April 10	The Earth	Chapter 20
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Week 14

April 13 – April 17 **Monday April 13th Exam IV-(Chapters 9, 19 & 20)**
Animals Chapter 10

Week 15

April 20 – April 24 Plants Chapter 11

Week 16

April 27 – May 1 The Human Body Chapter 12

Week 17

May 4 **Monday May 4th Final Exam (11:00am – 2:00pm)**
(50% Chapters 10, 11 & 12; 50% Comprehensive)

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.

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

4 regular semester exams	400
<u>Final exam</u>	<u>150</u>
Total	550

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

<u>Total points</u>	<u>Percent</u>	<u>Letter Grade</u>
495 – 550	90 – 100%	A
440 – 494	80 – 89.9%	B
385 – 439	70 – 79.9%	C
330 – 384	60 – 69.9%	D
329 – 000	< 60%	F

Questions will be drawn from information presented in lecture, information from your textbook, and through occasional class notes, handouts or additional assigned readings. Exam questions may consist of a few definitions or vocabulary/concepts, multiple choice questions and short essay questions. No notes, books, cell phones, PDA's, 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.

Extra Credit

There will be **NO** opportunities for extra credit, so don't even ask!

Study Tips:

Everyone has their own unique way of learning. How you study rather than how long you study will have a huge impact on your grade in this course. 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.

Disabled Students:

Reasonable accommodations will be provided for students with disabilities. Please meet with me the first week of class to discuss any special needs you may have.

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.