**BIOLOGY 3 – INTRODUCTION TO LIFE SCIENCE – SUMMER 2014**

**INSTRUCTOR INFO:**

Shayn Scheidt

Office Hours: By appointment

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**CLASS INFO:**

Section 77107

LECTURE/LAB: M T W Th 9:00AM – 12:20PM

**CATALOG DESCRIPTION:**

INTRODUCTION TO LIFE SCIENCE

4 units, 3 lecture hours, 2 lab hours, (Pass/No Pass)

BASIC SKILLS ADVISORIES: Eligibility for English 125 and 126.

This course is recommended for the non-biological

science and pre-education majors. This is an introductory

course using biological concepts. The organismal structure,

function, inheritance, evolution, and ecology are covered.

Field trips may be required. (A, CSU-GE, UC, I)

**ATTENDANCE AT ALL LECTURES AND LABS IS MANDATORY:**

Regular roll will be taken at the start of class and excessive absences may result in your being dropped from the course. If you miss a class, it is your responsibility to determine what was missed and get caught-up. Regular roll will be taken in both lecture and lab. Every student starts out with a certain amount of attendance points at the beginning of the semester. When class is missed, ten (10) points will be removed from this total. In contrast, bonus points may be rewarded, if needed, to those students who are consistently on time to class.

**SCHEDULE:**

**The schedule of lectures/labs and exams is TENTATIVE and subject to change at my discretion**. Changes in exam dates, lectures, etc., will be discussed at least one week before. Various biology related videos may also accompany some lectures or labs. Lab field trips may be required to the Fresno Chaffee Zoo, Kings River, or possible other location depending of time and resources. Alternative assignments may be given if you are unable to attend one or more of these events.

**SUPPLIES:**

Microscopes and lab supplies will be made available for each laboratory. Each student is responsible for any lost or broken laboratory materials and a replacement fee will be charged. You will need nine (9) 882 scantrons.

**Required Texts:**

Mader SS and Windelspecht M (2010) Essentials of Biology 2nd ed. Custom. New York: McGraw-Hill.

Storer TI, Usinger RL, and Lukas D (2004) Sierra Nevada Natural History, revised ed. University

 of California Press.

Biology 3 Laboratory Handouts

**MAKE-UP EXAMS/LABS**

There are NO lecture or lab make-up exams, UNLESS there is a medical or family emergency. You must provide written/signed evidence to prove your case. Missing more than one exam is detrimental to your grade. If there is a problem, please email me or talk to me after class, and we can discuss other options.

 \*One (1) lecture exam and one (1) lab exam will be dropped.

During each lab session, I will inform the class of the activities to be completed. There are NO opportunities for make-up labs. This is due to lab being set up only for the day it was selected for. Lab sheets are due after completion of the lab, unless otherwise specified.

**Extra Credit**

Each student may select any *science* topic. You will summarize an article pertaining to some field of biology, chemistry, or physics while supplementing information from two other sources, along with your own opinion. The paper must be based on information from a magazine (i.e. Scientific American, National Geographic) or newspaper (i.e. New York Times or The Fresno Bee). Online articles will only be accepted if they originate from the source that publishes the material. It must be at least one (1) full page in length (no headings!), 1.5 spaced, and include a title page (with the article name, the date, and your name) and article stapled to back. Papers will not be accepted by email. Each paper is worth ten (10) points; you may do up to six (6) total. It is not recommended to turn in all papers at once on the last day of class. Extra credit should be kept in mind mainly for days missed or improving an exam score.

**Points and Grading**

Lecture

Exam I: 100 points

Exam II: 100 points

Exam III: 100 points

Exam IV: 100 points

Exam V: 100 points

Exam VI: 100 points

Attendance: 80 points

Lab

Quiz 1: 100 points

Quiz 2: 100 points

Quiz 3: 100 points

Lab Worksheets: 10 points each x 12

Biotic Communities Project: 50 points

Zoo Trip: 25 points

River Trip: 25 points

Total: 1000 points \* because of exam drops

Scale

90-100% A

80-89 B

70-79 C

60-69 D

≤59 F

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| **II. COURSE OUTCOMES:** |
| ***(Specify the learning skills the student demonstrates through completing the course and link critical thinking skills to specific course content and objectives.)*** |
| Upon completion of this course, students will be able to: |
| 1. Evaluate current scientific literature and examine how the scientific method is employed in biological research.
2. Identify levels of biological organization and apply these concepts to living systems.
	* By examining anatomical and physiological features.
	* By investigating chemical and energy relationships.
3. Assess human impacts on natural systems and critically evaluate solutions to environmental problems.
4. Explore the cellular basis of life through the study of microscopy.
5. Apply the principles of Mendelian genetics to evolutionary theory and human medicine.
6. Recognize the function of DNA and how its discovery has impacted modern science.
7. Classify the wide range of living organisms and identify the evolutionary mechanisms that have impacted this diversity.
8. Recognize the chemical basis of life.
 |
| **III. COURSE OBJECTIVES:** |
| ***(Specify major objectives in terms of the observable knowledge and/or skills to be attained.)*** |
| In the process of completing this course, students will: |
| 1. read scientific literature and apply the steps of the scientific method to laboratory research.
2. compare and contrast Eukaryote and Prokaryote cell structure.
3. use the compound light microscope to examine cellular anatomy and reproduction.
4. recognize chemical elements, bonds and properties of water.
5. apply taxonomic classification in identifying animals through the use of a dichotomous key.
6. compare anatomical and physiological features seen in the animal kingdom with emphasis on human body systems.
7. calculate genetic probabilities based on the principles of Mendelian genetics.
	* identify human genetic mutations and explain probable causes for their occurrence.
8. distinguish the processes of transcription and translation and identify their roles in protein synthesis.
9. diagram plant life cycles and identify major plant adaptations.
10. explain and compare the processes of photosynthesis and cellular respiration.
11. demonstrate knowledge of evolutionary theory and identify the different mechanisms responsible for biological change.
12. describe energy flow and nutrient cycling within an ecosystem.
	* consider human impact on natural systems.
13. relate principles of population ecology to the study of the global human population.

\*From the RC website |

**\*NO FOOD OR BEVERAGE IN THE LABORATORY AT ANY TIME. YOU MUST WEAR CLOSE-TOED (NON-SANDLE TYPE) SHOES IN LABORATORY. STUDENTS ARE TO REPORT ANY ACCIDENT THAT OCCURS IN THE LAB TO ME IMMEDIATELY. \*PLAGERISM WILL NOT BE TOLERATED AND WILL RESULT IN A “0” AND BE ADDRESSED WITH THE ADMINISTRATION**

**\*ELECTRONIC DEVICES ARE NOT PERMITTED TO BE USED DURING EXAMS UNLESS OTHERWISE NOTED.**

**YOU WILL BE DISMISSED IF YOU FAIL TO COMPLY WITH THESE INSTRUCTIONS**

**CELL PHONES AND PAGERS**

Please turn cell phones and pagers to silent or vibration mode during class.

**ACADEMIC ACCOMMODATION**

If you have a verified need for an academic accommodation or materials in alternate media (i.e.: Braille, large print, electronic text, etc.) per the Americans with Disabilities Act or Section 504 of the Rehabilitation act please contact your instructor as soon as possible.

**MISCELLANEOUS**

If you should experience difficulty understanding the material presented in the course, it is your responsibility to see/email me at the earliest possible time. This class will prepare you for the basics so you can go on and succeed in the world. Relax, listen, learn, and have fun. It can be challenging but it really is an interesting subject!

**Lecture/Lab Schedule**

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| --- | --- | --- | --- | --- |
| Week 1: June 23-26 | M **Ch1**:*Biology: The Science of Life***Ch2***: The Chemical Basis of Life***Lab1**: Safety | T **Ch2***: The Chemical Basis of Life***Ch3**: *The Organic Molecules of Life***Lab2**: Microscopes | W **Ch3**: *The Organic Molecules of Life***Ch4:** *Inside the Cell***Lab3:** Cell | Th **\*\*Exam1\*\*****Ch5:** *The Dynamic Cell* |
| Week 2: June 30-July 3 | M **Ch5:** *The Dynamic Cell***Ch6**: *Energy for Life* **Lab3**:Cell  | T **Ch6**: *Energy for Life***Ch7**: *Energy for Cells* **Lab4**:Life After People (video) | W **Ch7**: *Energy for Cells***Lab5:** Biotic Communities Project | Th **\*\*Exam2\*\*****\*\*LabQuiz1\*\*****Ch8:** *Cellular Reproduction* |
| Week 3: July 7-10 | M **Ch8:** *Cellular Reproduction***Ch9:** *Meiosis and the Genetic Basis of Sexual Reproduction***Lab6:** Leaf  | T **Ch9:** *Meiosis and the Genetic Basis of Sexual Reproduction***Ch10**: *Patterns of Inheritance***Lab7:** Mitosis  | W **Ch10**: *Patterns of Inheritance***Lab8:** Genetics Lab | Th **\*\*Exam3\*\*****Ch11:** *DNA Biology* |
| Week 4: July 14-17 | **M Ch11:** *DNA Biology***Ch12:** *Biotechnology and Genomics* (handout)**Lab8:** Genetics  | **T Ch12:** *Biotechnology and Genomics* (handout)**Ch13:** *Genetic Counseling* **Lab9:** Michio Kaku: The Biotech Revolution (video) | **W Ch13:** *Genetic Counseling***Lab10:** Protein Synthesis  | Th **\*\*Exam4\*\*****\*\*LabQuiz2\*\*****Ch14:** *Darwin and Evolution* |
| Week 5: July 21 - 24 | M **Ch14:** *Darwin and Evolution***Ch15**: *Evolution on a Small Scale***Lab11:** Cosmos: Some of the Things that Molecules Do (video) | T **Ch15**: *Evolution on a Small Scale***Ch16**: *Evolution on a Large Scale***Lab12:** Welcome to Flatland | W **Ch16**: *Evolution on a Large Scale***Lab13:** Organ Systems (handout) | Th **\*\*Exam5\*\*****Ch17:** *The First Forms of Life*Fresno Chaffee Zoo (field trip) |
| Week 6: July 28-31 | M **Ch17:** *The First Forms of Life***Ch30:** *Ecology of Populations***Lab14:** Human Population | T **Ch30:** *Ecology of Populations***Ch31:** *Communities and Ecosystems***Lab15:** Cosmos: The World Set Free (video) | W **Ch31:** *Communities and Ecosystems***Ch32:** *Human Impact of the Biosphere***Lab16:** River Walk (field trip) | Th **\*\*Exam6\*\*** **\*\*LabQuiz3\*\*** |