BIO 1406-Principles of Biology II-Spring 2018

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Phone: 325-347-1122 ext 265

Learning Objectives and Nature of the Course:
This course introduces the integration between structure and function of biological chemistry, energetics and homeostasis, cell structure and function, gene expression, and patterns of inheritance in living systems. Observation, experimentation, and investigation are emphasized. Biology 1406 requires a conceptual understanding of the material rather than the simple memorization and regurgitation of facts. This course will challenge you to analyze and apply information, solve problems, and make connections different from the context in which they were learned. These are critical skills in biology. This course is intended for Biology majors and minors or those for which it is a degree requirement. It is not recommended for non-majors to fulfill a general education requirement for a laboratory course.

Course Materials:

Notebook

Google Drive/Flash Drive/Google Classroom

Lab (required): Google Drive/Flash Drive/Google Classroom

Course Idea Objectives:
- gain factual knowledge (terminology, classifications, methods, trends)
- learn fundamental principles and theories
- learn to apply course material (to improve thinking, problem solving, and decisions)
- acquire skills in working with others as a member of a team

A successful student in Principles of Biology should be able to achieve the following course and state core related learning outcomes:
- describe, explain, and predict natural phenomena using the scientific method. CT1, EQS1, EQS2 - Assessment = in class activities, lecture exams, embedded test questions, lab quizzes, and lab activities/reports
- design an experiment and complete a written description of their design, collaboratively conduct the experiment and analyze data generated to answer some component of a given causal question and defend the reasoning for conclusions drawn in the form of a laboratory report. CS1 - Assessment = in class activities, lab quizzes, and lab activities/reports
- collect and analyze data to evaluate relevant biological/ecological scenarios/problems (i.e. apply information you have learned). EQS1 - Assessment = In class activities, lecture exams, embedded test questions, lab quizzes, and lab activities/reports
• Work effectively with others to support and accomplish a shared goal = CS1, TW2 - Assessment = in class activities, lecture exams, embedded test questions, lab practical exams, and lab activities/reports
• connect what she/he is learning to her/his own field (i.e. to make biology relevant to your own academic endeavors). Assessment = in class activities, lecture exams, embedded test questions, lab practical exams, and lab activities/reports

For state and accreditation purposes this course will assess your ability to:
• CT1 - Gather, analyze, evaluate, and synthesize information relevant to a question or issue
• CS2 - Develop, interpret, and express ideas through effective written communication
• EQS1 - Manipulate and analyze numerical data and arrive at an informed conclusion
• EQS2 - Manipulate and analyze observable facts and arrive at an informed conclusion
• TW2 - Work effectively with others to support and accomplish a shared goal

To achieve these course objectives and help maximize your learning, it is vital that you attend class, come prepared, and study the material every day (see student responsibilities.)

Methods of Assessing Objectives (what you need to study): READ ME!!
The student learning outcomes will be assessed by exams, lecture activities, other out of class assignments and the laboratory. The learning objectives will be posted on the lecture presentations and on Google Classroom. You should use the objectives along with the notes and activities/experiments from lecture AND lab to help you study.

Grading:

<table>
<thead>
<tr>
<th>Component</th>
<th>Maximum Points</th>
<th>Grading Scale</th>
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<tbody>
<tr>
<td>Classwork, Homework, Quizzes</td>
<td>35%</td>
<td>A = 90-100%</td>
</tr>
<tr>
<td>Exams, Labs, Projects, Abstracts</td>
<td>65%</td>
<td>B = 80-89%</td>
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<tr>
<td></td>
<td></td>
<td>C = 70-79%</td>
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<td>D = 60-69%</td>
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<td>F = 60%</td>
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Exams: Questions typically require interpretation of data and application of concepts rather than rote memory. While emphasis will be placed on material specifically discussed in lectures, exams can also include questions covered in other assigned materials, readings and lab. Please refer to the objectives displayed in lecture to help you study. Questions can be any of the following types: objective questions (multiple choice), fill in the blank, matching, short answer, and application based problem sets. The final exam is cumulative and made up of questions similar to the types used on the course exams.

Make Up Exams:
• NO make up exams will be given.
• If you miss one exam, your final exam grade will be used to determine a substitute grade for the missed exam.
• You will only be allowed one "make up" exam per semester by substituting it with a percentage from your final exam. If you miss more than one exam, you will not pass the course. One exam grade may be replaced by a higher final exam grade only if all exams are taken.
• Everyone must take the final. If you do not take the final, you will not pass this course.

What do you do if you miss a lecture activity or homework assignment?
Please keep up with the online tools available if a class is missed (i.e. Google Classroom/Email). **No last minute offers of extra-credit are made in this course, so please don't ask.** This course is built with “extra credit” opportunities through homework, activities, labs, and exam grade replacement. Always attend class and strive to do your best, so that **YOU** may **EARN** the grade you want. It is your responsibility to keep up with your progress. Don’t worry, I will help you, if you just ask!

**Laboratory:**
This portion of the course offers you the opportunity to explore and apply concepts to answer research questions. Success in the laboratory involves teamwork in designing and conducting experiments, performing pre-lab and lab activities, and report writing. In addition, you will conduct activities designed to develop and improve critical thinking and problem solving skills related to the topics discussed in lectures.

**Student Responsibilities:**
**Attendance:**
Missed lecture and/or lab activities cannot be made up, however they may be posted online if you have an excused/extracurricular absence. Please inform me ahead of time if you will need to be absent for any reason so that I can assign alternative lab investigations/assessments.

**Academic Honesty and the ASU Honor Code:**
Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. Students are responsible for understanding the Academic Honor Code and the ASU policies on academic dishonesty, which is contained in both print and web versions of the Student Handbook. The penalty for ANY act of dishonesty in this class, including any form of cheating or plagiarism: 1) is a grade of ZERO on the assignment and, 2) disciplinary action as warranted in accordance with university guidelines. Please do NOT jeopardize your career; it’s not worth it.

**Class Preparation, Google Classroom, and ASU Email/Gmail:**
Much of your learning about biology must take place outside of the formal class meetings. You should be a frequent visitor to the course site. Please check it regularly. All of the material you need to prepare for class is available from the site: reading assignments for each unit, lecture presentations, homework assignments, in-class activity handouts, helpful handouts (for some concepts), and links to outside review materials (for some concepts). Since class announcements will be routinely distributed via email and Google Classroom, you will need to regularly check your email account and our course site (daily). ASU provides Internet and email services to you at any of the computer labs on campus. Call 942-2911 to set this up if necessary.
Lecture:
A typical class meeting will combine mini-lectures, discussions, group activities, multimedia presentations, and other demonstrations and activities to give you an opportunity to learn biological concepts in as active a manner as possible. Each segment of the course is structured around one or more conceptual units that can be interpreted or solved by applying selected biological concepts. As a member of the class you are also invited to:

- Ask questions, no matter how naive they seem to you. I will do my best to offer you a satisfactory answer. The only stupid question is one that isn’t asked.

- Ask for help and/or clarification. Don’t suffer in silence. I can’t help you learn if I don’t know you’re confused or if my instructions are unclear.

- Use your group members as study partners! Review exam review questions or notes together. Group learning can be powerful and is often beneficial in a course like biology.
<table>
<thead>
<tr>
<th>Week/Date (approx.)</th>
<th>Unit Concepts</th>
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| 1 Jan 16          | Unit 1- Energy Transformation  
| 2 Jan 23          | Unit 2 - Cells and Systems  
Chemistry of life/chemical origins of life/molecular basis of life: What are the 4 types of biological molecules? Why is water essential to life? What types of molecules make up cell membranes? |
| 3 Jan 30          | Unit 2 - Cell membranes and other cell constituents: What structures support cells? How do substances move within cells? Details of Organelle structure/function: What do the different organelles in the cell do? |
| 4 Feb 6           | Unit 2 – Cell communication and Transport Mechanisms: How do cells communicate with each other? How do substances move between cells? |
| 5 Feb 13          | Unit 2 – Enzymes: What are enzymes? Why are they necessary to living organisms? (EXAM) |
| 6 Feb 20          | Unit 2 - Neuron/ Na+/K+ Pump |
| 7 Feb 27          | Unit 2 – Immune Systems, Viruses, HIV |
| 8 Mar 6           | Unit 2 - Nephron and Homeostasis, Metabolism (EXAM) |
| 9 Mar 13          | SPRING BREAK |
| 10 Mar 20         | Unit 3- Genetics and Heredity  
Cell Cycle - Mitosis, Meiosis: Why do cells replicate? How do they replicate? What causes cancer? |
| 11 Mar 27         | Unit 3- Mendel and Chromosomes (EXAM) |
| 12 Apr 3          | Unit 3 – DNA, RTT, and Biotechnology  
How is genetic information passed down from one generation to the next? How do modern-day applications of biological concepts impact our lives? |
| 13 Apr 10         | Unit 4 – Proteins, Gene Expression  
DNA Structure, Gene Function: How do cells use their genetic information? How do cells know what genetic information to use? |
| 14 Apr 17         | Unit 4 – Mutations (EXAM) |
| 15 Apr 24         | Unit 4 - Reproduction and Development |
| 16, May 1         | Unit 4 - Gas Exchange |
Student Information Sheet–BIOLOGY 1406

You are required to sign and return this sheet to me. By doing so you acknowledge that you have received, read, and understand the syllabus and what is required of you to be successful in this course. The information contained in this syllabus is your guide to the rules of this course. If you do not understand what is expected of you or the impact of your actions (i.e. missing a class), you should come and see me ASAP (within the first week of class).

YOUR NAME (PRINT):

(Note: If you prefer to go by your middle name or a nickname, please indicate that in parentheses. Ex. Joseph Student (Joe))

I acknowledge that I have received and accept the responsibility for the information in the class syllabus. I also acknowledge that I have read and will abide by the ASU Honor Code.

NAME (signature):