INSTRUCTOR CONTACT INFORMATION:
Dr. Greg Krukonis
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Office hours: TBA

CLASS MEETING DATES/TIMES:
TR 8 AM  Section 40
TR 11 AM  Section 60

I. LEARNING OBJECTIVES AND NATURE OF THE COURSE:
This course introduces the integration between structure and function of biological organization. You will be asked to use processes of science to apply principles of evolution, 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.

University Catalog Course Description: 1406/BIOL 1406 Principles of Biology II (3-3). An introduction to the unifying principles of biology with emphasis on biological chemistry, energetics and homeostasis, cell structure and function, gene expression, and patterns of inheritance. Laboratory is designed to reinforce lecture topics and develop analytical skills essential to the practice of biology. Recommended as a second semester course of a two-course sequence for students majoring in biological sciences or related disciplines. Not intended for non-majors.

II. REQUIRED COURSE MATERIALS

TEXTBOOK & ONLINE COURSE CONTENT:
You will also absolutely need access the associated online product called "Connect" or "McGraw-Hill Connect" for the Hoefnagels text. You MUST purchase Connect access -- we will use this for online assignments.

There are several ways to purchase these resources.

Connect access includes access to an online copy of the Hoefnagels book. In addition, once you have purchased Connect you are then able to buy a loose-leaf copy of the text should you wish to (you supply your own three-ring binder) for a moderate sum. You don't have to, but you can. Many students find that it is easier to study from a paper version v. the online version. With the loose version you can carry around only the sections of the book you are currently studying.

Or you can purchase Connect and also purchase an actual bound copy of the book -- a bit nicer perhaps than a three-ring binder, but pricier.

ASU email account and access to Blackboard course site: [http://blackboard.angelo.edu](http://blackboard.angelo.edu)

Lab Course Materials (required):

For lab, you MUST purchase the book **Heimann C.P. and D.P. French. 2018. Investigating Biology. FountainHead Press: Southlake TX.** This book should be available in the bookstore by the first week of classes. It is only available through the ASU bookstore. Any additional lab materials you will need will be provided to you as a free download from BlackBoard.

**III. METHODS OF ASSESSING OBJECTIVES (ASSIGNMENTS & GRADING):** The student learning objectives will be assessed by exams, tutorials, lecture activities, and the laboratory. Learning objectives are posted on Blackboard.

Grading Information: Total Points = 1000

Exam 1  100  
Exam 2  100  
Exam 3  100  
Exam 4 (Final Exam)  170  
Class participation, Activities & Homework  180  
Laboratory  350  

A= 90 to 100% (900-1000 pts)  
B= 80 to 89.9% (800-899.9 pts)  
C= 70 to 79.9% (700-799.9 pts)  
D= 60 to 69.9% (600-699.9 pts)  
F = <60% (0-599.9 pts)
Lecture Activities & Homework: A maximum of 180 points is allowed from lecture activities and both online and offline homework; however, there will be opportunities to accumulate greater than 180 points. Lecture Activities are NOT attendance points, but you must be present to earn them as there are no make-ups. Participation is expected. If you do not earn points on a given assignment, you will have an opportunity to earn them on another, but are still responsible for the material covered in the assignment. Many homework assignments are on-line so that you can work on them at your convenience and get immediate feedback on your learning.

All exams, including the final exam are cumulative (i.e. questions on Exam 3 will include material covered on previous 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 also include questions covered in other assigned materials, readings and lab.

Make-Up Exams:
No make-up Exams will be given. If you miss one of the first three exams, the final exam will be used to determine a substitute grade for the missed exam. For example, if exam scores are 55, 0, 72, and 126. The missed exam score will be adjusted to match the final exam percentage points. To calculate this, your score on the final exam is divided by the number of points available on the final then multiplied by 100. For example, 126/170 *100=74%. 74% of 100 (the # of points available on Exam 2) is 74 points which would be substituted for your score on Exam 2. You will only be allowed to "substitute" for one exam during the semester by using the percentage grade from your final exam. If you miss more than one exam, for any reason, you will not pass this course. Everyone MUST take the final exam. You WILL NOT pass this course if you miss the final exam. If you have taken exams 1-3, the grade on your final exam (if higher than your lowest test score) will be used to replace your lowest exam score as calculated above. You may replace only one exam score. ***What do you do if you miss a lecture activity, homework assignment, or group assessment?

Online assignments will typically be available to complete at least a week before the deadline and graded in-class activities and quizzes should be expected regularly. Plan your schedule to take advantage of all opportunities to accumulate points as they are offered. Although only 180 points will be used in calculating your activities and homework grade; 220 points will be offered throughout the semester. These built-in extra points are a way to earn points to essentially make-up for missed assignments or activities. If you miss an assignment or activity deadline, you may not “make-up” that grade but you have the opportunity to continue to earn and accumulate points on other assignments. We use this as a way for students to accumulate points even if they have to miss a class for ANY reason. Use every opportunity early and throughout the semester to complete these activities to be sure that you will have 180 points by the end
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. You must earn a minimum of 60% of the lab points (210 out of 350) to pass the course! You WILL NOT pass the class if you fail the lab!!

IV. STUDENT RESPONSIBILITIES:

To achieve course objectives and maximize your learning, it is vital that you attend class, come prepared, and study the material every day. Attendance: You are expected to attend all scheduled class meetings. You are expected to be prepared and arrive on time and stay for the entire period. Missed lecture activity points CANNOT be made up. Attendance will be checked via the Top Hat response system. Please inform me well ahead of time if you will need to be absent for any reason including religious holidays.

NOTE: You are NOT automatically dropped if you stop attending class. April 2 is the last day to drop a course. Class Preparation- Blackboard (Bb) and Connect LearnSmart:

Much of your learning about biology must take place outside of formal class meetings. You should be a frequent visitor to the course Blackboard site (http://blackboard.angelo.edu). Please check Bb regularly. All of the material you need to prepare for class is available from the Bb site: reading assignments for each unit, lecture presentations, homework assignments, in-class activity handouts, helpful materials, and links to outside review materials. If you are a first time Bb user, your password is your ASU PIN (usually your 6-digit birth date unless you have changed it). You can change your password and update your personal information by adding your email address and a telephone number where you can be reached this semester. Many of the homework assignments are available through Bb and link directly to the online homework system Connect LearnSmart.

Class Preparation- ASU email: Class announcements will be routinely distributed via email. Please check you ASU email daily. All course correspondence will be through your ASU email only. Please see the email policy in Bb for more details. 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. Class Preparation- Lecture: A typical class meeting will combine lecture, 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. You can accumulate points toward your final semester grade from unannounced group or individual in-class activities (no make-ups) or homework assignments. We will also use Top Hat questions for in class activities.
Class Preparation - Expectations of the class:
• Ask questions, no matter how naive they seem to you.
• Ask for help and/or clarification. Don't suffer in silence. I can't help you learn if I don't know you are confused or if my instructions are unclear.
• Use your classmates as study partners! Group learning can be powerful and is often beneficial in a course like biology.

Course Groups: While taking exams is an individual activity, other activities will require your collaboration with other class members.

V. EXPECTED LEARNING OUTCOMES:

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
• CS1: 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.

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
VI. CLASS SCHEDULE BIO 1406 Spring 2019 Schedule (Tentative)

Week 1/January 15-19
Chapter 1  What is Science? How do you tell if something is alive?

Week 2/January 21-25
Chapter 2  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? [NOTE: Class will not meet MONDAY January 21 due to the MLK holiday]

Week 3/January 28-February 1

Week 4/February 4-8
Chapter 1, 2, 3  Wrap up and review. Exam 1 Friday for MWF classes, Thursday for TR classes.

Week 5/February 11-15
Chapter 26  How is information transmitted along a nerve cell? How do cells communicate with each other? How do substances move between cells?

Week 6/February 18-22
Chapter 4  Enzymes: What are enzymes? Why are they necessary to living organisms? Energy Transformations – How Cells Release Energy: Why EXACTLY do we need oxygen?

Week 7
February 25-March 1
Chapter 5  How do Cells Harvest Energy: What is light? Why is it Necessary to make glucose?

Week 8/March 4-8
Chapter 26, 4, 5  Wrap up and review. Exam 2 Friday for MWF classes, Thursday for TR classes.

March 11-15 SPRING BREAK

Week 9/March 18-22
Chapter 6  How do cells use energy in food to make ATP?

Week 10/March 25-29
Chapter 7  DNA Structure, Gene Function: How do cells use their genetic information?
How do cells know what genetic information to use?

March 28 Last Day to Drop a Class for the regular Spring 2018 semester.

Week 11/April 1-5
Chapter 8 DNA Replication, Cell Cycle, Mitosis: Why do cells replicate? How do they Replicate?

Week 12/April 8-11
Chapter 6, 7, 8 Wrap up and review. Exam 3 Friday for MWF classes, Thursday for TR classes.

Week 13/April 15-19
Chapter 9 Sexual Reproduction, Meiosis

Week 14/April 22-26
Chapter 10 How is genetic information passed down from one generation to the next?

Week 15/April 29 -May 3
Chapter 11 Biotechnology: How do modern-day applications of biological concepts impact our lives?

Week 16/May 6-10
FINAL EXAMS WEEK: Final Exams will be held in your usual classroom on the following dates:

TR 8AM section FINAL EXAM MAY 7 8AM
TR 11AM section FINAL EXAM MAY 7 10:30AM

VII. UNIVERSITY POLICIES

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.

Accommodations for students with disabilities: All students at Angelo State must have the capacity to undertake, with reasonable assistance from the faculty and administration, the academic challenges necessary to fulfill the academic requirements for the degree for certification programs that they are pursuing. If you have a disability
and need special accommodations of any nature, you should contact the Student Life Office (Garden Level, University Center, (325) 942-2191 or Student.Life@angelo.edu). I will be happy to make accommodations for you based on the recommendations from the Student Life Office. Please make your request early in the semester to allow time for appropriate arrangements.

Religious Holy Day: A student who intends to observe a religious holy day during the semester should make that intention known in writing to the instructor during the first week of the semester and one week prior to the absence. If this submission is completed, a student who is absent from classes for the observance of a religious holy day shall be allowed to take make up missed exams or assignments scheduled for that day in accordance with syllabus policy.