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, genetics, diversity, and ecology to living systems. Observation, experimentation, and investigation are emphasized. Biology 1407 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.

Lecture Course Materials (required):

  - Options for purchasing the Book with Connect Access Card From the ASU Bookstore or online
  - NOTE: with this option, when you set up your Connect Access through BlackBoard you will be given the option of purchasing a loose leaf copy of the text book for an additional fee. This will allow you to bring only the chapter or pages from the chapter you need to class with you.
  - You may also purchase a hardback version of the textbook online: ISBN10: 007802420X | ISBN13: 9780078024207
  - NOTE: You will ALSO need the Connect Access card from Option 2 above if you choose to purchase the textbook.
- TopHat Access: Information concerning purchasing this service will be provided during the first week of classes. For this REQUIRED program you will need:
  - TopHat Access ($32.75 for 1 semester access from ASU Bookstore. May be purchased online directly from TopHat for 1 year unlimited (as many classes as necessary) use OR 1 semester unlimited OR Lifetime. Each of these options are priced depending on how long you will use it. There are several courses at ASU that use this same service. The online purchase will be more economical over the long run.
  - A Digital device with wireless capability (cell phone, tablet, laptop).
    - If you do not have texting capability on your phone or do not own a tablet or laptop with wireless capability, please contact Dr. Connie Heimann (cheimann@angelo.edu) so that she can assist you. ASU provides wireless service to you for no additional charge.

NOTE: We will be using this same book and service for BIO 1406 in the Spring...so those of you taking both semesters of the course will be able to use the same book and services for both semesters.

Lab Course Materials (required):
- Heimann C.P. and D.P. French. 2017. Investigating Biology. FountainHead Press: Southlake TX. This book may not be available in the bookstore until after the first week of classes. Any lab materials you will need prior to the arrival of the lab manual in the bookstore will be provided to you as a free download from BlackBoard.
- Access to your ASU P: drive OR Flash (USB) drive

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

To achieve course objectives (see additional objectives on the last page of the syllabus) and help maximize your learning, it is vital that you attend class, come prepared, and study the material every day (more about this under student responsibilities).

**METHODS OF ASSESSING OBJECTIVES:** The student learning outcomes will be assessed by exams, tutorials, lecture activities, and the laboratory.

<table>
<thead>
<tr>
<th>Component</th>
<th>Maximum Points</th>
<th>Grading Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class participation Activities &amp;</td>
<td>255 from many 1 to 20 pt activities/homework/quizzes</td>
<td>A = 90 to 100% (900-1000 pts)</td>
</tr>
<tr>
<td>Homework</td>
<td></td>
<td>B = 80 to 89.9% (800-899.9 pts)</td>
</tr>
<tr>
<td>Exam 1</td>
<td>70</td>
<td>C = 70 to 79.9% (700-799.9 pts)</td>
</tr>
<tr>
<td>Exam 2</td>
<td>80</td>
<td>D = 60 to 69.9% (600-699.9 pts)</td>
</tr>
<tr>
<td>Exam 3</td>
<td>80</td>
<td>F = &lt;60% (0-599.9 pts)</td>
</tr>
<tr>
<td>Final Exam</td>
<td>175</td>
<td></td>
</tr>
<tr>
<td>Laboratory</td>
<td>350 More details given in lab</td>
<td></td>
</tr>
<tr>
<td>Total Points***</td>
<td>1000</td>
<td></td>
</tr>
</tbody>
</table>

**Lecture Activities & Homework:** A maximum of 255 points is allowed from lecture activities and both online and offline homework; however, there will be opportunities to earn 265-300 of these points. Lecture Activities are NOT attendance points, but you must be present to earn them—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. Exam questions will be all objective questions (multiple choice).

**Make-Up Exams:**

- No make-up Exams will be given.
- If you miss one of the first four exams, the final exam will be used to determine a substitute grade for the missed exam. For example, if exam scores are 55, 0, 64, and 122.5. The missed exam score will be adjusted to “make-up” the missed points. To calculate this, your score on the final exam is divided by the number of points available on the final multiplied by 100. For example, 122.5/175 *100=70%. 70% of 80 (the # of points available on exam 2) is 56 points which would be substituted for your score on exam 2.
- You will only be allowed to “make-up” one exam during the semester by substituting it with a percentage 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, 2, 3, & 4, 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. If you have missed an exam, you do not have this option.

See the Exam Re-grading Procedure on Blackboard if you believe your score is in error or have found an answer that has been misgraded. The deadline for requesting any recalculating or re-grading is 5pm 48 hours following the return of the exam. No exceptions. Remember that 1 point change in a grade is at best on 1/4th of a point on your final course average. Remember that the exams are photocopied before being returned to you (I will know if an answer has been changed after it was graded).

***What do you do if you miss a lecture activity, homework assignment, or group exam assessment?***

In the lecture portion of the course, 265-300 points for lecture activities and homework will be offered, although only 255 points will be used in calculating your grade. 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 255 points by the end of the semester. No last-minute offers of extra-credit are made in this course, so please don’t ask. It wouldn’t be fair to your classmates that have done all the work to earn their grade. Pay your premiums - use the extra-credit opportunities early in the semester!
All grades will be calculated in the same way, regardless of extenuating circumstances or any reason not related to your actual performance in the course. However much I may sympathize with your personal circumstances, I never consider them to be a basis for grade assignments. The activity and homework points serve as an extremely generous, built-in curve. I strongly encourage you to take advantage of them when they become available because once assigned they cannot be made up. Therefore you should 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 point total. 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. **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!!**

**STUDENT RESPONSIBILITIES:**

**Attendance:** You are expected to attend all scheduled class meetings. You are expected to arrive on time and stay for the entire period. Missed lecture activity points CANNOT be made up. Attendance will be checked at each class meeting via the Top Hat system at random. 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. **November 3 is the last day to drop a course.**

**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.

**Class Preparation Blackboard (Bb) and Connect Plus:** Much of your learning about biology must take place outside of the 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 handouts (for some concepts), and links to outside review materials (for some concepts). 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 Plus.

**TopHat:** TopHat is a web based platform that allows you to answer questions in class that are projected on your personal device (cell phone, laptop, or tablet). It allows you to check on how you are learning and helps your instructor identify when the class may be doing great or struggling a bit with a concept. We use TopHat because it lets us see how students are doing with a particular concept or idea—in real time! We use TopHat in class so that you can answer questions and see the results. If the class is doing great, we move on to the next subject for the day. If not, it lets us help you learn what you might be struggling with before we move on to the next activity or topic. We also will use it for quizzes in class.

**Please register before the end of the first week of classes.** You should have received an email from your instructor with instructions for enrolling in their specific TopHat course. If you did not receive this email, please contact your instructor IMMEDIATELY to
request the link to the TopHat website. Otherwise, complete the information to pay with a credit card. It is important that you sign up for your lecture instructors website or you will not be able to participate (and earn points) in class.

**Class Preparation ASU email:** Since class announcements will be routinely distributed via email, you will need to regularly check your ASU email account. **Please check your ASU email daily.** All course correspondence will be through your ASU email only (I will not respond to email from other accounts). 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.

**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. You can accumulate up to 255 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.

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 (on Bb) or notes together. Group learning can be powerful and is often beneficial in a course like biology.

**Course Groups:** While taking exams is an individual activity, almost all other activities will require your participation with other class members. We will form groups the first week of class. Many of the lecture exercises will be solved collaboratively.

**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.
<table>
<thead>
<tr>
<th>Week/ Date (approx)</th>
<th>Unit Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Aug. 28-Sept 1</td>
<td><strong>Unit 1 - The origin and history of life:</strong> What is life? When (and how) did life on earth begin?</td>
</tr>
<tr>
<td>2 September 4-8</td>
<td><strong>Unit 1 – Diversity of life introduction/Biological Classification Systems:</strong> An introduction to Biodiversity. Why is biodiversity important?/ History of Classification of organisms (brief), Speciation, An introduction to taxonomy, Classification and Systematics. [NOTE: Classes will not meet MONDAY September 4 due to the Labor Day holiday]</td>
</tr>
<tr>
<td>3 September 11-15</td>
<td><strong>Unit 1 – Biological Classification Systems:</strong> How do scientists classify organisms? How do they determine which characteristics are important? How have Mass Extinctions impacted Diversity?</td>
</tr>
<tr>
<td>4 September 18-22</td>
<td><strong>Unit 2 – Diversity of Life – Prokaryotes</strong> How do you distinguish among Prokaryotes? How do Prokaryotic cells differ from Eukaryotic cells? Why are bacteria and archaea important to human life?</td>
</tr>
<tr>
<td>5 September 24-29</td>
<td>Learning Reinforcement Activities 1: Exam 1 Friday for MWF classes, Thursday for TR classes. Putting it all together - Exam debriefing activities and concept application assessments.</td>
</tr>
<tr>
<td>6 October 2-6</td>
<td><strong>Unit 2 – Diversity of Life – Eukaryotes 1</strong> Kingdom Protista. Is it “better” to be multicellular?</td>
</tr>
<tr>
<td>7 October 9-13</td>
<td><strong>Unit 2 – Diversity of Life – Eukaryotes 2</strong> How do you know what it is? Kingdoms Animalia, Plantae, and Fungi</td>
</tr>
<tr>
<td>8 October 16-20</td>
<td><strong>Unit 3 – Ecology of Life:</strong> Genetics, Population Dynamics and Immunity.</td>
</tr>
<tr>
<td>9 October 23-27</td>
<td>Learning Reinforcement Activities 2: Exam 2 Friday for MWF classes, Thursday for TR classes. Putting it all together - Exam debriefing activities and concept application assessments.</td>
</tr>
<tr>
<td>10 October 30-Nov. 3</td>
<td><strong>Unit 3 – Ecology of Life:</strong> Natural Selection, Hardy-Weinberg Equilibrium, competition, and controls on population growth</td>
</tr>
<tr>
<td>November 3</td>
<td>Last Day to Drop a Class or Withdraw from the University.</td>
</tr>
<tr>
<td>11 November 6-10</td>
<td>Learning Reinforcement Activities 3: Exam 3 Friday for MWF classes, Thursday for TR classes. Putting it all together - Exam debriefing activities and concept application assessments.</td>
</tr>
<tr>
<td>12 November 13-17</td>
<td><strong>Unit 4 – Ecology of Life:</strong> Kin selection, altruism, learning and mating behaviors</td>
</tr>
<tr>
<td>13 November 20-21</td>
<td><strong>Unit 4 – Ecology of Life:</strong> Communities and Ecosystems and Chemical Cycling [NOTE: Classes will not meet November 22-24. Happy Thanksgiving.]</td>
</tr>
<tr>
<td>14 Nov. 27- Dec. 1</td>
<td><strong>Unit 4 – Ecology of Life:</strong> Biomes and Succession</td>
</tr>
<tr>
<td>15 December 4-8</td>
<td>Putting it all together – Final Exam Review Quizzes</td>
</tr>
<tr>
<td>December 11-15</td>
<td><strong>FINAL EXAMS WEEK:</strong> Final Exams will be held in the same classroom as class on the following dates: Section 010 - Wednesday, December 13 - 8:00am-10:00am Section 020 - Monday, December 11 - 10:30am-12:30pm Section 030 - Wednesday, December 13 - 10:30am-12:30pm Section 040 – Tuesday, December 12 - 8:00am-10:00am Section 050 – Tuesday, December 12 - 10:30am-12:30pm Section 060 – Thursday, December 14 - 8:00am-10:00am</td>
</tr>
</tbody>
</table>
Student Information Sheet–BIO 1407

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))

MAJOR: _________________________________________________________________________________

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): ________________________________________________________________

Tell me why you are here (i.e why do you want/need to take this class)

What would you like to learn about Biology this Fall?

Name one thing you are proud of and why.

List five things you hope to do/see/experience at some point in your life.

On the back draw a picture of yourself - - artistic excellence not required, only enthusiasm 😊