Introduction & Student Learning Outcomes:

Welcome to Principles of Biology II Lab! This lab is designed to develop and enhance your independent, investigative skills as a biologist by giving you hands-on, practical experience in expanding your science process skills. These are skills that will be necessary for biologists and health-care professionals alike. This semester you will collaborate with others in your lab and engage in scientific investigations in major conceptual areas in biology. By working in groups you will also develop both verbal and written communication skills critical to effective transfer of information in biology. As a successful student, by the end of the semester, you should be able to:

- Develop science process skills  ■  Draw conclusions
- Test hypotheses and make predictions  ■  Effectively communicate ideas and information
- Design experiments  ■  Use the library and internet as a resource
- Collect and organize data  ■  Critically evaluate sources of information for
- Critically analyze information  ■  reliability and credibility

Instructor Information:

Instructor: Greg Krukonis
Email: gkrukonis@angelo.edu
Phone: 325-486-6637
Office: Cavness Science Building 003A

Required Supplies:

2) Flash (USB) drive or P: drive access

All other required materials will be provided either in class or on BlackBoard.

Grading: Lab constitutes 35% of your overall grade which come from activities, planning forms, and written reports. You will not pass the course if you fail the lab.

Points for the lab are earned as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points Each</th>
<th>Total Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Lab Reports</td>
<td>15</td>
<td>150</td>
</tr>
<tr>
<td>Pre-lab Activities, Quizzes and Homework</td>
<td>Varies</td>
<td>200</td>
</tr>
<tr>
<td>Total Points</td>
<td></td>
<td>350</td>
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NOTE: It is the policy of ALL the lab instructors that NO late work will be accepted.
While the maximum number of points possible in the laboratory is capped at 350 there will be 50 ‘extra’ points available. These “extra” points (50) can be “banked” and used as disaster insurance (see below) to make up lab report points missed if you are absent.

What do you do if you miss a lab?
We created Disaster Insurance for just such circumstances. It allows students to miss a lab without worrying about it. Disaster insurance is made up of a few extra-credit opportunities and by completing all of the pre-lab activities. You use these “extra” points to “bank” and use against unforeseen or unforeseen absences during the semester. If you complete these throughout the semester, you will have earned the points you might need if disaster strikes and you are forced to miss. Remember - you CANNOT attend other lab sections - the ONLY way to earn points for labs you miss for ANY reason is by using your laboratory disaster insurance!

***You MUST earn 210 of the 350 points to pass the lab and thus the course.

Attendance: Due to the collaborative nature of this lab, it is CRITICAL that you attend lab every week. Why?

· Many of the investigations are designed to take two weeks to complete. If you miss one week of the investigation, your partners have to take up the slack for you AND you miss information critical to successfully completing the lab.

· You MUST attend the lab section for which you are registered. You WILL NOT be allowed to attend any other lab section during the same week. Again, this is because you complete the work as a group. You will not be allowed to disrupt another group’s work in another lab AND you don’t want to leave your own group shorthanded. There are NO EXCEPTIONS so don’t even ask.

· Your lab will meet on the same day at the same time every week. So don’t schedule doctor or dentist appointments, vacations, or work at that time. We understand that emergencies or other circumstances beyond your control can happen and that you might have to miss lab. If so, it is your responsibility to contact your instructor and your partners AS SOON AS possible.

· There are NO MAKE-UPS. If you miss an opportunity to earn points due to an absence you can’t make up the assignment. We have structured the grading system (see above) so that you can earn points that can be “banked” and used to make up the POINTS that you missed. So while you can’t make up the assignment, you will have opportunities to make up the points.

In summary - You should understand that:
· Lab reports and most in-class exercises will be a group effort
· Attendance is mandatory to earn points for laboratories and in-class exercises.
· If you are dissatisfied with your partners, the instructor will not act unless you express this to him/her personally.

Safety Training
The University requires that each student attending laboratory courses complete two lab safety courses. One is a general lab safety course that reviews standard safety practices in all science labs. The other course is a chemical hygiene course. Once you take these courses in ANY science lab you should not have to repeat them. But each student MUST complete both courses before they will be allowed to attend labs. These courses should be available to you in your course list on BlackBoard.

**General Lab Rules & Information**

In addition to the lab safety rules outlined in the lab safety courses, all students are required to adhere to the following lab rules.

1. Class will begin promptly on the hour. BE ON TIME!!

2. Various assignments for this course are turned in at different times and locations depending on what the assignment is and what day your lab meets. It is YOUR responsibility to know when assignments are due for your lab section and to complete assignments on time and turn them in to the correct location.

3. Student behavior in the lab is to be maintained in a manner conducive to learning and study. No horseplay, rough housing or any type of disruptive behavior is allowed in the lab at any time. Likewise, no degrading or offensive language will be tolerated. You will be asked to leave and subject to further disciplinary action from the biology department and/or the university if you are disruptive in any way in the laboratory.

4. Turn off cell phones and pagers during lab. No texting, no talking, NO EXCEPTIONS! Points may be deducted at the discretion of your instructor.

5. You are required to work in groups in a manner conducive to learning. No disruptive behavior, laziness, or poor attitude will be tolerated. Furthermore, we expect you to PARTICIPATE in lab activities. Specifically, we expect that you will:
   - Come to class prepared.
   - Participate and express opinions, respectfully.
   - Allow others to participate by offering them the opportunity to do so.
   - Contact group members in a timely manner to provide any needed materials you may have if you must be absent.

6. No children are allowed in the lab at any time.

7. You are not allowed to remove any materials from the laboratory, except by special permission from the instructor. You must always return materials to their proper place.

8. Food, drinks, and all tobacco products are not allowed in the laboratory. You may take breaks at your discretion outside the lab.

9. You are expected to treat all lab materials with the utmost respect. Any person caught defacing, throwing, carelessly handling, etc., lab materials will be asked to leave the lab.
immediately and subject to further disciplinary action from the biology department and university.

10. Wastes and other scraps should be discarded in designated containers only. Please do not put them in the sinks, drawers, etc.

11. At the end of each lab session, each lab group is responsible for cleaning their work area. You must clean the table with provided cleaners. You will not be allowed to leave lab unless your table is cleaned and your stools pushed under the table. Points may be deducted at the discretion of your instructor if your area is not cleaned properly.

No form of academic dishonesty will be tolerated. Please refer to your student handbook for the University’s policies regarding the penalties and procedures involved.
January 15-19  Scientific Method Lab

January 21-25  Labs do NOT meet this week

January 28-February 1 Biological Molecules Lab

February 4-8  Osmosis Lab

February 11-15  Organelles Lab

February 18-22  Enzymes Lab

February 25-March 1  Metabolic Rate Lab

March 4-8  Photosynthesis Lab

March 11-15  SPRING BREAK  --  No Labs

March 18-22  Transcription and Translation Lab

March 25-29  Bacterial Transformation Lab Week 1

April 1-5  Bacterial Transformation Lab Week 2

April 8-11  DNA Fingerprinting Lab

April 15-19  Cell Cycle Lab Week 1

April 22-26  Cell Cycle Lab Week 1

April 29 - May 3  Final Lab Quiz
Total Available Points = 400
Maximum Lab Score = 350

Scientific Method 45
15 Lab Report: Scientific Method
10 Homework: Scientific Method
10 Homework: Graphing with Excel
10 Post Lab Quiz: Scientific Method

Biological Molecules 35
10 Pre-lab Quiz: Biological Molecules
10 Lab Activity Worksheet: Chemistry of Life
15 Lab Report: Biological Molecules

Osmosis 35
10 Pre-lab Quiz: Osmosis
10 Lab Activity Worksheet: The Properties of Water
15 Lab Report: Osmosis

Organelles 30
10 Organelle Functions Pre-lab Activity
10 Lab Activity 1: Organelle Structure and Function worksheets from the lab manual
10 Lab Activity 2: Importance of Organelles (from your lab manual) "Organelles in the News" summary OR "Organelles and Disease" summary

Enzymes 25
10 Pre-lab Quiz: Enzymes
15 Lab Report: Enzymes

Metabolic Rate 35
10 Pre-lab Quiz: Metabolic Rate
10 Homework: LearnSmart Activity
15 Lab Report: Metabolic Rate

Photosynthesis 35
10 Pre-lab Quiz: Photosynthesis
15 Lab Report: Photosynthesis
10 IN LAB Quiz: Metabolism and Photosynthesis

Transcription and Translation 30
15 Lab Activity: Transcription
15 Lab Activity: Translation

Bacterial Transformation 30
15 Pre-lab Quiz: Bacterial Transformation
15 Bacterial Transformation Lab Report
DNA Fingerprinting 25
10 Pre-lab Quiz: DNA Fingerprinting
15 Lab Report: DNA Fingerprinting

Cell cycle 55
10 Pre-lab Quiz: Mitosis and Meiosis
10 Pre-lab Quiz: Mendelian Genetics
5 Mitosis activity
5 Meiosis Activity
10 Mitosis and Meiosis IN LAB Quiz
15 Lab Report: Mendelian Genetics

LAB BONUS FINAL 20