Instructor: Prof Julie Mustard  
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Office: LHSB 2.814A  
Phone: 882-5869

Office Hours: Mon 4:30 - 5:30 pm; Tues10:00 – noon and Thurs 2:15 – 4:15 pm; or by appointment. You do not need to make an appointment to see me during my posted office hours, just show up and I will be happy to talk with you.

Communication via email: Due to privacy issues, you need to email me using your official UTRGV email account. I will not respond to emails from other accounts (gmail, yahoo, etc.). I will do my best to answer email promptly, but this may take up to two working days. Remember to put “Bio 1406” or “Bio Lab” in the subject line to make sure the message doesn't end up in the junk mail folder. Also, please use correct grammar (complete sentences, etc.) when communicating and not “txtese”. If you have lengthy and/or complicated questions, you are much better off coming to see me at office hours than trying to get an explanation via email.

COURSE REQUIREMENTS:
Online Lab Manual-via Blackboard 
Internet Access 
Lab Notebook: To document laboratory procedures, and maintain accurate data collection. 
Lab Coat, gloves, and Safety glasses 
Calculator, markers, pen

COURSE OBJECTIVES:
The laboratory is designed to teach students how to do science. Some components of Inquiry-Based Science are:
1. Learn how to ask a question and how to uncover the facts based on your knowledge and experience.
2. Become familiar with laboratory methods and approaches to experimentation.
3. Learn to critically analyze and interpret data.
4. Learn to detect shortcomings of experimental designs and identify possible ways to improve the design.
5. Learn the fundamental and specialized techniques that allow you to approach questions in several areas of discipline.
6. Be able to interpret the results of an experiment and analyze interpretation by others.

TEXAS HIGHER EDUCATION COORDINATING BOARD: CORE OUTCOMES

<table>
<thead>
<tr>
<th>Learning Objective</th>
<th>Activities/Assignments that Addresses Objective</th>
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<tbody>
<tr>
<td>Critical Thinking</td>
<td>Role of science and scientific method in discovery and exploration Inference; interpreting data (quizzes, lab exercises, tests, lab reports)</td>
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<tr>
<td>Communication Skills</td>
<td>Written – assignments including lab reports Oral – short, in-class presentations; asking questions;</td>
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<tr>
<td>Empiric and Quantitative Skills</td>
<td>Collection and Interpretation of data; applying concepts to real-life situations; lab reports</td>
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<tr>
<td>Teamwork</td>
<td>Lab group</td>
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ASSIGNMENTS/ACTIVITIES
You will have five types of assignments/activities for this laboratory.

1) Prelab Assessment
   The purpose of the prelab assessment is to ensure that you are prepared for lab, and that you understand the background knowledge needed to complete and understand the lab activities for the week.

2) Weekly Quiz
   You will have a quiz for each lab you complete. The purpose of the quiz is to assess your understanding of the lab and associated content. The lab quizzes will be timed, and require that you work on them independently.

3) Lab Notebook/Assignments
   Instructions and guidelines for completing your lab notebook are present in the first laboratory module. Your lab notebook will be evaluated and recorded as part of your attendance grade for the week. Some of your lab exercises will be formative assessments (completed prior to coming to lab); some will function as a mechanism of compiling data or observations you collected during lab;

4) Lab Report
   You will complete a lab report during the semester. The lab report will present results from one of your lab exercises and will be written in the form of a scientific report.

5) Mid-Term and Final Exams:
   There will be two exams over the course of the semester. The final exam is not comprehensive and will cover only activities, skills, and content covered between the time of the midterm and the final. The exams test practical knowledge of the content and procedures that you cover during lab. Some of the questions of these tests will ask you to identify, classify, and compare/contrast by using models, microscope slides, and organisms. There will be no exam review sessions. Also, there will be no other bonus points or extra credit other than what is listed above.

GRADES:
Your laboratory grade will be determined by:
   1. Attendance and participation .................... 10%
   2. Prelab Assessment ................................. 10%
   3. Weekly Lab Quiz .................................. 10%
   4. Lab Notebook/Assignments ...................... 15%
   5. Lab Report ......................................... 15%
   6. Midterm and Final ................................. 40%

Come to lab prepared. Read the laboratory procedure. To complete the laboratory exercise efficiently, and in the time allotted, it is important to understand the purpose of the laboratory exercise, and the procedure being followed. Your depth of understanding will be enhanced by your efforts in preparing for lab. Studies have shown that students understand better when using an inquiry based approach. That means, rather than an instructor explain what you will do in lab, and you following a prescribed procedure, you will prepare and understand what will be happening in lab prior to coming to lab.

The lab reports will follow a standard format, and will be due the lab period following completion of the lab exercise. There will be supplemental lab exercises that involve fill-in-the-blank. This course is augmented by Blackboard. An up-to-date calendar outlining deadlines and topics will be maintained at Blackboard. Supplemental handouts can be downloaded from the site, and you can use it to communicate with your instructor and other students in the class.

Your final lab grade will account for 25% of your Biology 1406 grade.

ATTENDANCE:
Attendance is mandatory. Because other lab instructors do not have access to your lab section, you can’t earn credit or complete labs by going to an alternate lab section meeting. In order to earn all attendance points, your lab instructor will examine your lab notebook to verify that you’ve collected the data required for the lab and followed appropriate procedures. A student who misses a lab for a legitimate reason or due
to an emergency (e.g., a medical problem, accident, etc.) should contact their lab instructor immediately and provide documentation for the absence (e.g., a doctor’s note, accident report, etc.). For an unexcused absence, the student will receive a zero for all work missed that day, and no makeup work will be accepted. Any student with more than one unexcused absence will receive a grade of zero in the lab for the entire semester.

Students will be asked to sign in during the first 10 min of the class period. Students arriving more than 10 min after the beginning of class will be considered absent. If you have a situation (such as a class across campus), which may make you tardy, please let me know ahead of time.

Students are responsible for all material covered in the course, even material missed during an excused absence. If you know you will miss an exam for a legitimate reason (e.g. sanctioned travel) and you notify your lab instructor at least one week in advance of the exam, arrangements may be made for you to take the exam at a different time. You must take the exam the week it is given and at your scheduled time. Make-ups will not be granted if an exam is missed and no prior arrangements were made before your exam, except under special circumstances, which will only be approved on a case by case basis.

SAFETY:
All students who are enrolled in a lab section MUST complete the online safety training course administered by the Department of Environmental Health and Safety (EHS). Instructions for completing this training will be provided by EHS, and will not be available through the Blackboard portion of your course.

You are expected to wear protective laboratory gear at all times, including the first laboratory meeting the week of 22 - 26 January.

- no sandals or open-toed shoes
- legs and ankles should be covered
- avoid baggy clothing that may catch on lab equipment
- wear a lab coat
- use protective eye-wear
- wear gloves
- no food, drink or chewing gum is allowed in the lab

Absolutely no use of electronic devices such as phones, laptops or "smart watches" will be allowed during experimental work. No talking on the phone will be allowed at any time in the lab room. Electronic devices should be put away before class begins and should not be taken out at any time during class.

SCHOLASTIC INTEGRITY: As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, plagiarism (including self-plagiarism), and collusion; submission for credit of any work or materials that are attributable in whole or in part to another person; taking an examination for another person; any act designed to give unfair advantage to a student; or the attempt to commit such acts. Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty incidents will be reported to the Dean of Students.

STUDENTS WITH DISABILITIES: Students with a documented disability (physical, psychological, learning, or other disability which affects academic performance) who would like to receive academic accommodations should contact Student Accessibility Services (SAS) as soon as possible to schedule an appointment to initiate services. Accommodations can be arranged through SAS at any time, but are not retroactive. Students who suffer a broken bone, severe injury or undergo surgery during the semester are eligible for temporary services. Brownsville Campus: Student Accessibility Services is located in Cortez
Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at ability@utrgv.edu. **Edinburg Campus:** Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at ability@utrgv.edu.

**COURSE DROPS:** According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date. Following that date, students must be assigned a letter grade and can no longer drop the class. Students considering dropping the class should be aware of the “3-peat rule” and the “6-drop” rule so they can recognize how dropped classes may affect their academic success. The 6-drop rule refers to Texas law that dictates that undergraduate students may not drop more than six courses during their undergraduate career. Courses dropped at other Texas public higher education institutions will count toward the six-course drop limit. The 3-peat rule refers to additional fees charged to students who take the same class for the third time.

**SEXUAL HARASSMENT, DISCRIMINATION, and VIOLENCE:** In accordance with UT System regulations, your instructor is a “Responsible Employee” for reporting purposes under Title IX regulations and so must report any instance, occurring during a student’s time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can be found at www.utrgv.edu/equity, including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a learning, working, and living environment that promotes personal integrity, civility, and mutual respect that is free from sexual misconduct and discrimination.

**MANDATORY COURSE EVALUATION PERIOD:** Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account (http://my.utrgv.edu); you will be contacted through email with further instructions. Students who complete their evaluations will have priority access to their grades. Online evaluations will be available for this course April 11 – May 2.

**STUDENT SERVICES:** Students seeking academic help in their studies can use university resources in addition to an instructor’s office hours. University Resources include the Learning Center, Writing Center, Advising Center and Career Center. The centers provide services such as tutoring, writing help, critical thinking, study skills, degree planning, and student employment. Locations are:

- **Learning center:** BSTUN 2.10 (Brownsville) or ELCTR 100 (Edinburg)
- **Writing center:** BLIBR 3.206 (Brownsville) or ESTAC 3.119 (Edinburg)
- **Advising center:** BMAIN 1.400 (Brownsville) or ESWKH 101 (Edinburg)
- **Career center:** BCRTZ 129 (Brownsville) or ESSBL 2.101 (Edinburg)

**BIOLOGY 1406**

**LAB SCHEDULE**

<table>
<thead>
<tr>
<th>Week</th>
<th>Module</th>
<th>Activity</th>
<th>Topic/Concepts</th>
<th>Dates</th>
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<tbody>
<tr>
<td>1</td>
<td>MATIN LUTHER KING JR. HOLIDAY. NO CLASS</td>
<td></td>
<td></td>
<td>Jan 15&lt;sup&gt;th&lt;/sup&gt;, 16&lt;sup&gt;th&lt;/sup&gt;</td>
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<tr>
<td>2</td>
<td>Intro Safety Module 1: Determining the pH of solutions and SI units</td>
<td>Syllabus Lab Safety Contract pH using Litmus paper and pHydrian paper</td>
<td>Safety Measurements and Units Solutions; pH</td>
<td>Jan 22&lt;sup&gt;nd&lt;/sup&gt;, 23&lt;sup&gt;rd&lt;/sup&gt;</td>
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<tr>
<td>3</td>
<td>Module 2.:Testing for the presence of cellular macromolecules</td>
<td>Sudan IV Biuret test Reducing Proteins, Carbohydrates, Lipids, and Nutrition</td>
<td></td>
<td>Jan 29&lt;sup&gt;th&lt;/sup&gt;, 30&lt;sup&gt;th&lt;/sup&gt; Online Lab Safety Training Bring in to class or</td>
</tr>
<tr>
<td>Module</td>
<td>Topic</td>
<td>Details</td>
<td>Instructions</td>
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<tr>
<td>4</td>
<td><strong>Module 3 Visualizing and describing cells by light microscopy</strong></td>
<td>Sugars, Starch</td>
<td>QUIZ Proper use of pipetting devices. Email a screenshot of completed training to Lab Instructor or TA.</td>
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<td>5</td>
<td><strong>Module 4: Diffusion and Osmosis</strong></td>
<td>Microscopy of prepared slides and sample preparation from cheek swab, onion</td>
<td>QUIZ Cell structure and function; focusing a microscope; preparing a slide.</td>
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<td>6</td>
<td><strong>Module 5: Effect of enzyme &amp; temperature on catalysis</strong></td>
<td>Low, medium and high enzyme concentration</td>
<td>QUIZ Enzyme function; specifics about the enzyme peroxidase, and the mechanism of reaction, and tracking reactions. Linear Regression.</td>
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<tr>
<td>7</td>
<td><strong>Module 6: Effect of inhibitors and temperature on catalysis</strong></td>
<td>Use of respiration tubes and yeast to measure CO₂</td>
<td>QUIZ Optimum conditions for enzyme function; denaturation of proteins as a result of temperature/pH change; role of inhibitors and activators in biological systems.</td>
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<td>8</td>
<td><strong>LABORATORY MID-TERM EXAM</strong></td>
<td>TURN IN LAB NOTEBOOK</td>
<td>Mar 5ᵗʰ, 6ᵗʰ</td>
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<td>9</td>
<td><strong>SPRING BREAK. NO CLASSES</strong></td>
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<td>MAR 12ᵗᴴ-17ᵗᴴ</td>
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<tr>
<td>10</td>
<td><strong>Module 7: Effect of substrate &amp; temperature on fermentation</strong></td>
<td>Use of respiration tubes and yeast to measure CO₂</td>
<td>QUIZ Glycolysis, fermentation. Procedures involved in. Mar 19ᵗʰ, 20ᵗʰ</td>
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<tr>
<td>Module</td>
<td>Title</td>
<td>Description</td>
<td>Date(s)</td>
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<td>11</td>
<td>Module 8: Visualizing photosynthesis pigments &amp; starch</td>
<td>Slide preparation, Osmosis in Elodea, Slide prep. Of <em>Ligustrum</em> leaf, Light absorption by Elodea</td>
<td>Mar 26th, 27th</td>
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<tr>
<td>12</td>
<td>Module 9: Visualizing Mitosis</td>
<td>Mitosis – identify stages of mitosis in alium (onion, squash or both), whitefish, and ascaris</td>
<td>Apr 2nd, 3rd</td>
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<tr>
<td>13</td>
<td>Module 10: Mendelian Genetics</td>
<td>Monohybrid and Dihybrid crosses; Chi Square test</td>
<td>Apr 9th, 10th</td>
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<tr>
<td>14</td>
<td>Module 11: Molecular biology &amp; PCR</td>
<td>Mutations</td>
<td>Apr 16th, 17th</td>
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<td>15</td>
<td>REVIEW</td>
<td></td>
<td>Apr 23th, 24th</td>
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<tr>
<td>16</td>
<td>LAB FINAL</td>
<td>EXAM</td>
<td>Apr 30th, May 1st</td>
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*Students are responsible for being aware of any changes to the above schedule listed on Blackboard of their lab section and or announced during class.*

*Lab Coats must be worn for every lab. Gloves and goggles are required when dissections and or reagents are used in the lab.*