Laboratory Manual:
Introductory Biochemistry Laboratory Manual by Ahmad, Whitehouse, & Rampersad

Course Overview:
In the introductory biochemistry lab one will learn the application of various techniques such as column chromatography, electrophoresis, protein quantification, and enzyme kinetics as well as the study of proteins, nucleic acids, carbohydrate, and lipids.

Course Objectives:
Biochemistry lab is designed to give you hands-on experience with the laboratory techniques used in biochemistry. Upon completion of this course you should be:

• Knowledgeable in the design, execution, and scientific reporting of experiments conducted in a biochemistry laboratory.
• Able to properly document activities and results in a laboratory notebook.
• Able to analyze and communicate the significance of data collected in your laboratory activities. This includes the proper use of statistical analysis when appropriate.
• Able to use such resources as PubMed to find scientific literature, as well as the ability to read, understand, and cite the work.
• Be able to perform biochemistry techniques and appropriately use the instrumentation associated with them.

Grading:
Your final grade will be determined by: (subject to minor changes)

10% - Group write up (Protein Quantification)
10% - Group write up (Enzyme kinetics)
10% - Group write up (Colorimetric characterization of sugars)
10% - Group write up (SDS PAGE)
10% - Group write up (Lipids)
15% - labs with individual reports (work presented in a folder)
10% - Pre-Lab Activities
25% - Final Exam
100%

The grading scale is as follows:
A = 90-100  B = 80-89  C = 70-79  D = 60-69  F = < 60

Group Lab Reports:
Scientific work is being done increasingly in groups and students need to gain experience working in teams in order to gain confidence and learn how to play the role of a team member. We will be working both in small groups and individually to ensure that certain objectives are met.
There will be a total of 5 group lab reports. These lab reports are produced by team work within a group; the groups will allocation the work among themselves. The experiment dates for the lab are tentative and may change. The lab reports should be written in Times New Roman, size 12 font, spacing 1.5. The role of lab report writing should be divided in the following three categories: These roles will rotate among the team members from one lab report to the other.

a. Lead data collector and calculation
b. Lead lab report writer
c. Lead discussion/critique initiator/reviewer, and final report producer
**Group lab report guide:**
- Title Page – title of the lab, date, lab course section, group members name and role on the report.
- Abstract – should contain an introduction, results/discussion, and conclusion (3 paragraphs) no references.
- Introduction – 3 paragraphs minimum, include references.
- Materials and Methods – 3rd person past tense. (cite lab manual)
- Results – graphs, data matrix, calculations, etc.
- Discussion – discuss results, why experiment worked or didn’t work, what does the data means?
- Conclusion – briefly cover the experiment’s overall objectives in light of your results.
- Works cited – include all sources covered in paper, MLA Format.

**Individual lab report guide:**
- Title page - title of the lab, date, lab course section, name.
- Abstract – should contain an introduction of lab, and expectations (1 paragraphs) no references.
- Results – graphs, data matrix, calculations, etc.
- Conclusion – Briefly cover the experiment’s objective and results.

**Make-up lab or examinations:**
Make-up lab or Examination will NOT be allowed.

**Late lab reports:**
A 50% reduction in grades will be recorded for any missed lab report. If the lab reports are not submitted by the next lab meeting day, a zero will be recorded for the lab grade. One will receive zero for any missed quiz or final exam.

**Lab attire & safety:**
Students are required to wear pants, closed-toe shoes, hair up, lab coat, and goggles. Students are also required to follow the safety guidelines listed in the Safety Handout.

**Locker assignment and check-in:**
Make sure that everything is present and in good condition. Any broken/cracked items should be ‘swapped out’ at the stockroom (Rm. 3.218).

**Class attendance:**
University policy requires that students attend labs. Any student who misses lab 3 times without notice will be dropped from the course. Class attendance will be taken.

**Lab-safety requirements:**
PPE (Personal Protective Equipment): Worn at ALL times when the lab is in progress
- Safety Glasses/Goggles – Can be worn over prescription glasses. No contact lenses.
- Lab Coat – Non-flammable garments. NO synthetic fibers or loosely woven natural fibers.
- Closed-Foot Shoes - Footwear should NOT readily absorb chemicals during a chemical spill.
- Long Pants – No part of the legs should be exposed. (No Leggings)
Bring lab manual and calculator every meeting
NO food, drink (water bottle), or gum allowed. NO horseplay or unauthorized experiments.

**Other lab policies:**
- Turn off phones during lab
- No headphones/earbuds allowed
- No texting allowed
## Tentative Lab Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Quiz/Report</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan 24</td>
<td>Check in and introduction to lab course</td>
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<tr>
<td>2</td>
<td>Jan 31</td>
<td>Protein Quantification in Biological Samples*</td>
<td>Feb 07</td>
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<tr>
<td>3</td>
<td>Feb 7</td>
<td>Amino Acid Titration</td>
<td>Feb 14</td>
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<td>6</td>
<td>Feb 14</td>
<td>Application of Ninhydrin Reagent</td>
<td>Feb 21</td>
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<tr>
<td>4</td>
<td>Feb 21</td>
<td>Determination of Protease Activity</td>
<td>Feb 28</td>
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<tr>
<td>5</td>
<td>Feb 28</td>
<td>Enzyme Kinetics*</td>
<td>Mar 7</td>
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<tr>
<td>7</td>
<td>Mar 7</td>
<td>Colorimetric Characterization of Sugars*</td>
<td>Mar 21</td>
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<td>8</td>
<td>Mar 21</td>
<td>Gel Filtration Chromatography</td>
<td>Mar 28</td>
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<td>9</td>
<td>Mar 28</td>
<td>SDS-PAGE*</td>
<td>Apr 4</td>
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<tr>
<td>10</td>
<td>Apr 4</td>
<td>Lipid-1</td>
<td>Apr 11</td>
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<td>11</td>
<td>Apr 11</td>
<td>Lipid-2*</td>
<td>Apr 18</td>
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<tr>
<td>12</td>
<td>Apr 18</td>
<td>Exam review and check out</td>
<td>----</td>
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<tr>
<td>13</td>
<td>Apr 25</td>
<td>Final exam</td>
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*Group Report writing

**Students with disabilities:**
If you have a documented disability (physical, psychological, learning, or other disability which affects your academic performance) and would like to receive academic accommodations, please inform your instructor and contact Student Accessibility Services to schedule an appointment to initiate services. It is recommended that you schedule an appointment with Student Accessibility Services before classes start. However, accommodations can be provided at any time. **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 accessibility@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 accessibility@utrgv.edu.

**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. Online evaluations will be available Aug 09-Aug 18. Students who complete their evaluations will have priority access to their grades.

**Attendance:**
Students are expected to attend all scheduled classes and may be dropped from the course for excessive absences. UTRGV’s attendance policy excuses students from attending class if they are participating in officially sponsored university activities, such as athletics; for observance of religious holy days; or for military service. Students should contact the instructor in advance of the excused absence and arrange to make up missed work or examinations.
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, 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.

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 learning, working, and living environment that promotes personal integrity, civility, and mutual respect in an environment free from sexual misconduct and discrimination.

Course drops:
According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date. The last day to drop with “DR” grade and withdraw with “W” grade is Thursday, April 12. 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.