BIOCHEMISTRY LABORATORY SYLLABUS (CHEM 3103.03)

Course: Biochemistry I Laboratory
Instructor: Yonghong Zhang
Term: Fall 2017
Website: UTRGV Blackboard
Office: SCNE 3.152
Class Time: M 1:40-4:20 p.m.
Email: yonghong.zhang@utrgv.edu
Laboratory Room: SCNE 3.232
Office Phone: 956-665-2288
Course Number: 19401 (3103.03)
Course Hours: M-R 8:30 - 10:00 a.m.

Textbook and/or Resource Material
Biochemistry Laboratory Manual by Dr. H. Ahmad (available at the bookstore), Laboratory note book

Course Overview
Introduction to the application of various techniques (spectroscopy, column chromatography, electrophoresis, etc.) to study macromolecules (proteins and nucleic acids), protein estimation, enzyme kinetics and chemistry of carbohydrate and nucleic acids.

Course Description and Prerequisites
CHEM 3303; can be taken concurrently with CHEM 3303

Learning Objectives/Outcomes for the Course
The Biochemistry Laboratory is designed to give you hands-on experience with laboratory techniques used in Biochemistry. Upon completion of this course you should be:
1. Knowledgeable in the design, execution, and scientific reporting of experiments conducted in a Biochemistry laboratory.
2. Able to properly document your activities and results
3. Able to analyze and communicate the significance of data collected in your laboratory activities. This includes the proper use of statistical analysis where appropriate.
4. Able to use such resources as PubMed to find scientific literature, and to read, understand and cite it.
5. Able to perform techniques and use appropriate instrumentation associated with the investigation of biomolecules.

Grading Policies
Your final grade will be determined by:
1. Group write up- 20% (DNA purification, PCR, and agarose gel analysis)
2. Group write up- 20% (Enzyme Kinetics)
3. Group write up: 10% (all other labs combined)
4. Individual lab book: 10%
5. Quizzes: 10% (may be combined with individual lab book)
6. Final comprehensive exam: 30%
The grading scale is as follows:
- 100-90 = A
- 80-89 = B
- 70-79 = C
- 60-69 = D
- 59 and below = F

Make-up Examinations: ONLY for official university events such as a member of the band for a concert or an athlete for a contest or an approved holy day or with a medical. A makeup exam will NOT be given for ANY other circumstances. Note: a grade of zero will be recorded for any missed exams or lab reports.

Group/individual work: Scientific work is being done increasingly in groups and students need to gain experience working in teams to gain confidence and to learn how to play the roles of team members. We will be working both in small groups and singly to ensure that certain objectives are met.
Calendar of Activities
Important dates for Fall 2017 include:

- Aug 28: Fall classes begin
- Aug 31: Last day to add or register for Fall classes
- Sept 4: Labor Day Holiday, **no classes**
- Sept 13: Census day (last day to drop without it appearing on the transcript)
- Nov 15: Last day to drop (DR grade) a class or withdraw (grade of W)
- Nov 15 - Dec 6: Online course evaluations available
- Nov 23 - Nov 26: Thanksgiving Holiday, **no classes**

Other Course Information

Due date for Lab reports: To be announced in class.

Instructions for pre-lab preparation and format for writing lab reports:

1) Obtain a bound notebook for use for pre-lab preparation, outlining/flowcharting lab experiments (before the lab is performed) notes on additional background information, recording observations and lab data during the lab period. This will serve as the resource from which you will write lab reports that will be turned in.
2) Number the pages in the notebook and include a Table of contents for easy referencing.
3) The notebooks will be checked periodically for a grade.
4) Prepare before the lab starts, any tables etc. that will be required for easy data collection.
5) Lab reports are to be written in the format of a research publication presented in a separate handout. Please follow the format carefully. The reports should be typewritten and graphs prepared using graphical analysis programs.

Attire in the lab: Students ARE REQUIRED TO WEAR SAFETY GOGGLES AND LAB COATS AT ALL TIMES

Safety in the Lab: Please see separate Safety Handout

Locker Assignment and Check-in: Make sure that everything is present and in good condition. Any dirty or broken/cracked items should be ‘swapped out’ at the Stockroom window (Rm. 3.218)

Schedule: please see attached for Tentative Class Schedule and Blackboard for the most up to date Schedule
Lab reports: please see separate handout

Appointments: If you can demonstrate to me that you cannot meet during my Office Hours, then you can make an appointment to see me outside office hours, but it must be done 3 days in advance by e-mail. Cellular Phones: **Cellular phones and/or beepers should be turned off or set to vibrate during the class period.**

UTRGV Policy Statements

**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](http://my.utrgv.edu)); you will be contacted through email with further instructions. Online evaluations will be
available November 15 – December 06, 2017. 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 a 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. 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.
# Tentative Lab Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Lab Book</th>
<th>App. Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>09/11/2017</td>
<td>Check in, Lab safety, use of pipetman, calculations in the laboratory etc, reading a research paper; computer lab</td>
<td>Page 5-11</td>
<td>2</td>
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<tr>
<td>2</td>
<td>09/18/2017</td>
<td>Protein Lab I - Lowry’s Assay – <strong>group write-up 5%</strong></td>
<td>Pages 17-20</td>
<td>2</td>
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<tr>
<td>3</td>
<td>09/25/2017</td>
<td>Protein Lab II- Amino Acid Titration - <strong>group write-up 5%</strong></td>
<td>Pages 21-22</td>
<td>3</td>
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<tr>
<td>4</td>
<td>10/02/2017</td>
<td>Protein Lab III- Protease Activity</td>
<td>Pages 24-25</td>
<td>2</td>
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<tr>
<td>5</td>
<td>10/09/2017</td>
<td>Use of Ninhydrin Reaction</td>
<td>Pages 27-31</td>
<td>3</td>
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<tr>
<td>6</td>
<td>10/16/2017</td>
<td>Carbohydrate Analysis</td>
<td>Pages 34-36</td>
<td>2</td>
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<tr>
<td>7</td>
<td>10/23/2017</td>
<td>Enzyme Kinetics - <strong>group write-up worth 20%!!</strong></td>
<td>Pages 37-39</td>
<td>2</td>
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<tr>
<td>8</td>
<td>10/30/2017</td>
<td>Nucleic Acid – Isolation</td>
<td>Pages 53-57</td>
<td>2</td>
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<tr>
<td>9</td>
<td>11/06/2017</td>
<td>Nucleic Acid – PCR</td>
<td>Pages 53-57</td>
<td>2</td>
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<tr>
<td>10</td>
<td>11/13/2017</td>
<td>Nucleic Acid – Agarose Gel Electrophoresis <strong>Group write-up for all Nucleic Acid labs 20%!!</strong></td>
<td>Pages 53-57</td>
<td>2</td>
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<tr>
<td>11</td>
<td>11/20/2017</td>
<td>Gel Filtration Chromatography</td>
<td>Pages 40-45</td>
<td>3</td>
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<tr>
<td>12</td>
<td>11/27/2017</td>
<td>Polyacrylamide Gel Electrophoresis (SDS-PAGE) <strong>Final Exam Review</strong></td>
<td>Pages 46-52</td>
<td>3</td>
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<tr>
<td>13</td>
<td>12/04/2017</td>
<td><strong>Final Exam</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
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## Important Dates
- **Sept 13, 2017**: Census Day
- **Nov 15, 2017**: Last day to Drop/Withdraw
- **Nov 15 ~ Dec 6, 2017**: Mandatory Course Evaluation