CHEM 4042 Biochemistry Laboratory
Summer 2021

Instructor: Yingchun Li
Section # and CRN: Z50 32419
Office Location: New Science Building 213 (not used)
Office Phone: 936-261-3109
Email Address: ycli@pvamu.edu
Office Hours: To be scheduled as needed
Mode of Instruction: Hybrid
Course Location: online
Class Days & Times: MTWR 2:00-5:20 PM
Catalog Description: Experiments in basic methodology for the isolation, purification and characterization of carbohydrates, lipids, proteins, nucleic acids and enzymes from natural products

Prerequisites: Prerequisites: CHEM 2033 and CHEM 2043 or permission from instructor
Co-requisites: CHEM 4033
Required Texts: Manual will be and video will be provided.

Recommended

Student Learning Outcomes:

<table>
<thead>
<tr>
<th>Program Learning Outcome #</th>
<th>Alignment</th>
<th>Core Curriculum Outcome #</th>
<th>Alignment</th>
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<tbody>
<tr>
<td>1</td>
<td>Be able to identify an unknown sugar</td>
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<td>2</td>
<td>Be able to use spectrophotometer</td>
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<td>3</td>
<td>Demonstrate the ability to separate cholesterol from egg yolk</td>
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<td>4</td>
<td>Define sickle and normal hemoglobin</td>
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<td>5</td>
<td>Be able to study the Km of enzyme betagalactosidase</td>
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<td>6</td>
<td>Demonstrate ability to identify amino acids and proteins by color test and chromatography</td>
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<td>7</td>
<td>Be able to isolate, estimate amount and purity of DNA from bacterial</td>
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<td>8</td>
<td>Separation of DAN by gel electrophoresis</td>
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PVAMU Library: phone: (936) 261-1500; web: [http://www.tamu.edu/pvamu/library/](http://www.tamu.edu/pvamu/library/)
COVID-19 Campus Safety Measures

To promote public safety and protect students, faculty, and staff during the coronavirus pandemic, PVAMU has adopted policies and practices to limit virus transmission.

- **Self-monitoring** - Students should follow CDC recommendations for self-monitoring. Students who have a fever or exhibit symptoms of COVID-19 should participate in class remotely and should not participate in face-to-face instruction.

- **Face Coverings** - Face coverings (cloth face covering, surgical mask, etc.) are recommended in classrooms, teaching laboratories, common spaces such as lobbies and hallways, public study spaces, libraries, academic resource and support offices, and outdoor spaces where 6 feet of physical distancing is difficult to reliably maintain.

- **Physical Distancing** - Physical distancing should be maintained between students, instructors, and others in course and course-related activities where possible.

- **Personal Illness and Quarantine** - Students required to quarantine are to participate in courses and course-related activities remotely and must not attend face-to-face course activities. Students should notify their instructors of the quarantine requirement. Students under quarantine are expected to participate in courses and complete graded work unless they have symptoms that are too severe to participate in course activities. Students experiencing personal injury or illness that is too severe for the student to attend class qualify for an excused absence. To receive an excused absence, students must provide appropriate documentation to the Office for Student Conduct, studentconduct@pvamu.edu.

**Requirement of Course Participation and Methods for the Course Instruction**

This course require student to do the following for each experiment

1) read principles of each experiments and answer the prelab questions
2) participate zoom meeting of introduction for each lab
3) watch videos of experiments
4) answer questions after watching the video
5) write a summary about the experiment.

Any other specific requirement for an experiment will be made known during zoom meeting

**Method of Determining Final Course Grade**

This course will utilize the following instruments to determine student grades and proficiency of the learning outcomes for the course

1. **10 experiments in total will be tentatively given in the course**
   - Each experiment yields 100 pints credit which include 3 parts weighted as following
     - 25 point for prelab online questions
     - 25 points for post video online questions
     - 50 points for summary
     - 1000 points total for experiments

2. **One online Midterm exam**
   - This online exam will yield 100 points credit

The maximum points is 1100 points

**Conversion to percentage:**
(your total credits/1100) x 100%

Final grade letter grade corresponding to percentage

A  90% or above  
B  80% to 89%  
C  70% to 79%  
D  60% to 69%  
F  less than 60%

Grading Policies

1. Prelab, and post lab and the exam will be given as online quiz for one attempt before the due date; No make up will be given without acceptable documented excuse
2. Summary of experiment will be given as assignments with clear due date. Submit of assignment after due date will be accepted with 40% (20 point) deduction and 20% more for every 24 hour interval.

Note. The tentative grading methods and policy might be modified. You will be clearly informed if any modification is made.
Summer Semester Calendar

Day 1 and 2: Laboratory Preparation, safety training
Day 3: Carbohydrates – Identification of an unknown
   Unit 1: Color Test, Polarimetry, Paper Chromatography

Day 4: Carbohydrates – Identification of an unknown
   Unit 1: continued

Day 5: Spectrophotometry Introduction
   Unit 2: Measuring the spectra of Methyl Orange and Bromophenol blue, Demonstrating
           of Beer-Lambert’s Law, Determination of glucose in human blood (mimics)

Day 6: Separation and identification of plant pigments
   Unit 3: Isolation by solvent extraction
           Separation by thin layer chromatography

Day 7: Quantification of plants pigments in a mixture
   Unit 3: continued

Day 8: Mid-Term EXAM

Day 9: Amino acids and proteins
   Unit 4: Identification of an unknown amino acid by Paper Chromatography,
           Isolation of Casein from milk, Separation of protein by zone electrophoresis, Gel
           Electrophoresis for determination of molecular weight of proteins

Day 10: Amino acids and proteins
   Unit 4: continued

Day 11: Nucleic Acids
   Unit 5: Isolation of DNA from E. coli cells and measurement of its purity by
           ultraviolet spectroscopy, DNA Fingerprinting

Day 12: Nucleic Acids
   Unit 5: continued

Day 13: Enzymes
   Unit 6: Determination of Salivary Amylase
           Study of the properties of beta-galactosidase and Determination of $V_{\text{max}}, K_m, K_i$

Day 14: Enzymes
   Unit 6: continued

Day 15: Review and Final Exam
Student Support and Success

John B. Coleman Library
The library and its partners have as their mission "to provide resources and instructional material in support of the evolving curriculum, as a partner in Prairie View A&M University's mission of teaching, research, and service" and to support the University's core values of "access and quality, diversity, leadership, relevance, and social responsibility" through emphasis on ten key areas of service. It maintains library collections and access both on campus, online, and through local agreements to further the educational goals of students and faculty.

Center for Academic Support
The Center for Academic Support (CAS) offers Tutoring via peer tutoring. The services include workshops (i.e., Save My Semester, Recalculate Your Route), seminars (i.e., Tools You Can Use: TI-84), group review sessions (i.e., College Algebra Topic Reviews, GRE Preparation), group study opportunities (i.e., TSIA, HESI, Study Break, Exam Cram), and test-taking strategies (How to take Notes, Study Buddy, 5 Day Study Guide). The Tutoring Center is a nationally certified tutoring program through the National Tutoring Association. The peer tutors are trained and certified by the coordinator each semester. Location: J.B. Coleman Library

COMPASS
The Center for the Oversight and Management of Personalized Academic Student Success (COMPASS) is designed to help Prairie View students in their second year and beyond navigate towards graduation by providing the following services: Academic Advisement, Targeted Tutorials for Personalized Learning, Campus-Wide Referrals, and Academic & Social Workshops. Location: J.B. Coleman Library

Writing Center
The Writing Center provides student consultants on all aspects of the writing process and a variety of writing assignments. Writing Center consultations assist students in such areas as prewriting, brainstorming, audience awareness, organization, research, and citation. Location: Hilliard Hall 121

University Rules and Procedures

Disability statement (See Student Handbook):
Students with disabilities, including learning disabilities, who wish to request accommodations in class should register with the Services for Students with Disabilities (SSD) early in the semester so that appropriate arrangements may be made. In accordance with federal laws, a student requesting special accommodations must provide documentation of their disability to the SSD coordinator.

Academic misconduct (See Student Handbook):
You are expected to practice academic honesty in every aspect of this course and all other courses. Make sure you are familiar with your Student Handbook, especially the section on academic misconduct. Students who engage in academic misconduct are subject to university disciplinary procedures.

Forms of academic dishonesty:
1. Cheating: deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered; giving or receiving aid unauthorized by the instructor on assignments or examinations.

2. Academic misconduct: tampering with grades or taking part in obtaining or distributing any part of a scheduled test.

3. Fabrication: use of invented information or falsified research.

4. Plagiarism: unacknowledged quotation and/or paraphrase of someone else's words, ideas, or data as one's own in work submitted for credit. Failure to identify information or essays from the Internet and submitting them as one's own work also constitutes plagiarism.
Nonacademic misconduct (See Student Handbook)
The university respects the rights of instructors to teach and students to learn. Maintenance of these rights requires campus conditions that do not impede their exercise. Campus behavior that interferes with either (1) the instructor’s ability to conduct the class, (2) the inability of other students to profit from the instructional program, or (3) campus behavior that interferes with the rights of others will not be tolerated. An individual engaging in such disruptive behavior may be subject to disciplinary action. Such incidents will be adjudicated by the Dean of Students under nonacademic procedures.

Sexual misconduct (See Student Handbook):
Sexual harassment of students and employers at Prairie View A&M University is unacceptable and will not be tolerated. Any member of the university community violating this policy will be subject to disciplinary action.

Attendance Policy
Prairie View A&M University requires regular class attendance. Excessive absences will result in lowered grades. Excessive absenteeism, whether excused or unexcused, may result in a student’s course grade being reduced or in assignment of a grade of “F”. Absences are accumulated beginning with the first day of class.

Student Academic Appeals Process
Authority and responsibility for assigning grades to students rests with the faculty. However, in those instances where students believe that miscommunication, errors, or unfairness of any kind may have adversely affected the instructor’s assessment of their academic performance, the student has a right to appeal by the procedure listed in the Undergraduate Catalog and by doing so within thirty days of receiving the grade or experiencing any other problematic academic event that prompted the complaint.

Disability statement (See Student Handbook):
Students with disabilities, including learning disabilities, who wish to request accommodations in class should register with the Services for Students with Disabilities (SSD) early in the semester so that appropriate arrangements may be made. In accordance with federal laws, a student requesting special accommodations must provide documentation of their disability to the SSD coordinator.

**TECHNICAL CONSIDERATIONS**

*Minimum Recommended Hardware and Software:*
- Intel PC or Laptop with Windows 7; Mac with OS X; Smartphone or iPad/Tablet with Wi-Fi
- High speed Internet access
- 8 GB Memory
- Hard drive with 320 GB storage space
- 15” monitor, 800x600, color or 16 bit
- Sound card w/speakers
- Microphone and recording software
- Keyboard & mouse
- Most current version of Google Chrome, Safari, Internet Explorer or Firefox

*Note:* Be sure to enable Java & pop-ups

*Participants should have a basic proficiency of the following computer skills:*
- Sending and receiving email
- A working knowledge of the Internet
- Proficiency in Microsoft Word (or a program convertible to Word)
- Proficiency in the Acrobat PDF Reader
- Basic knowledge of Windows or Mac O.S.

*Netiquette (online etiquette):*
Students are expected to participate in all discussions and virtual classroom chats as directed. Students are to be respectful and courteous to others on discussions boards. Foul or abusive language will not be tolerated.

*Technical Support:*
Students should go to [https://mypassword.pvamu.edu/](https://mypassword.pvamu.edu/) if they have password issues. The page will provide
instructions for resetting passwords and contact information if login issues persist. For other technical questions regarding eCourses, call the Office of Distance Learning at 936-261-3283

**Communication Expectations and Standards:**
Emails or discussion postings will receive a response from the instructor, usually in less than 48 hours. Urgent emails should be marked as such. Check regularly for responses.

**Discussion Requirement:**
Online courses often require minimal to no face-to-face meetings. However, conversations about the readings, lectures, materials, and other aspects of the course can take place in a seminar fashion. This will be accomplished by the use of the discussion board. The exact use of discussion will be determined by the instructor.

*It is strongly suggested* that students type their discussion postings in a word processing application and save it to their PC or a removable drive before posting to the discussion board. This is important for two reasons: 1) If for some reason your discussion responses are lost in your online course, you will have another copy; 2) Grammatical errors can be greatly minimized by the use of the spell-and-grammar check functions in word processing applications. Once the post(s) have been typed and corrected in the word processing application, it should be copied and pasted to the discussion board.