



SYLLABUS

CHEM 4204 Biochemistry Laboratory Spring 2024

Instructor: Yingchun Li
Section # and CRN: P52 24615
Office Location: New Science Building 230M
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Office Hours: MW. 11:00-1:00 or by appointment
Mode of Instruction: Face to Face

Course Location: New Science building 217
Class Days & Times: MW 1:00-2:50 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: Manuals will be provided.

Recommended Texts: PVAMU Library: phone: (936) 261-1500; web: <http://www.tamu.edu/pvamu/library/>

Student Learning Outcomes:

	Upon successful completion of this course, students will be able to:	Program Learning Outcome # Alignment	Core Curriculum Outcome Alignment
1	Know the safety rules in biochemistry lab and be able to follow		
2	Be able to use balance and pipets and record data scientifically		
3	Be able to use spectrometer to analysis qualitatively and quantitatively		
4	Be able to make buffer solution of specified pH		
5	Be able to Excel to process data by curve fitting		
6	Be able to identify carbohydrate by color test, TLC and polarimetry		
7	Demonstrate the ability to extract, characterize and measure plant pigments		
8	Be able to isolate isoelectric point titration		
9	Be able to identify amino acids and protein by color test, chromatography		
10	Be able to make and use agarose gel to separate protein by electrophoresis		
11	DNA fingerprinting for paternity identification		
12	Activity of amylase and product identification		

Major Course Requirements

This course require student to attend the lab in person and on time. Lab reports are mandatory and required to be submitted on time. All safety rules are to be followed strictly.

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

Lab Reports – written tests designed to measure knowledge of presented course material

Final Exam – written assignments designed to supplement and reinforce course material

Quiz – in class designed to measure ability to apply presented course material

Class Participation - measure of student's attendance, performance and participation in board work and class discussions as observed by the instructor

Course Grade Requirement	Value	Total
Assignments(Lab reports)	10 assignments at 100 points each	1000
Mid Term Exam	100	100
Final Exam	150	150
Quizzes	10 Quizzes 20 points each	200
Class performance and participation	20 section, 20 point each	400
Total:		1850

Grading Criteria and Conversion:

A = 90% or above;

B = 80 – 89%

C = 70 – 79%;

D = 60 – 69%;

F = below 60

Detailed Description of Major Assignments:

Assignment Title	Description
Lab report	To be write independently in Microsoft Words following a specified format and to be submitted before the due date, 20 percent will be deducted each day after the due date until it reaches zero
Midterm exam & Final exam	written tests designed to measure knowledge of presented as prelab, postlab, procedures and discussion about the experiment coved
Class performance	Based on instructor's observation of student's attendance, focus, and ability to carry out the experiment in an safe, accurate, orderly, and professional way

Instructor Policies

1. No makeup for any experiment without an acceptable excuse.
2. Makeup for a section-exam and the final exam with an acceptable excuse (letters or notes from a doctor or an authorized administrator with a phone number for confirmation).
4. Cell phone, laptop, tablet is only allowed when the students are told.

Semester Calendar

Week One:	Laboratory Preparation
Week Two:	Carbohydrates – Identification of an unknown Unit 1: Color Test
Week Three:	Carbohydrates – Identification of an unknown Unit 1: Polarimetry, Thin layer Chromatography (TLC)
Week Four:	Spectrophotometry Introduction Unit 2: Measuring the spectra of Methyl Orange and Bromophenol blue, Demonstrating of Beer-Lambert's Law, Determination of glucose in human urine by Somogyi & Nelson's Colorimetric Procedure, Blood Glucose
Week Five:	Making buffer solution Unit 3: pH measurement with a pH meter, Preparation buffer solution from system selection and proper calculation
Week Six:	Plant pigments extraction, characterization and quantification Unit 4: Extracting of pigment from plant leaves, recording UV spectrum of the products,
Week Seven:	Plant pigments extraction, characterization and quantification Unit 4: Separation and identification by TLC, estimation chlorophyll a and b based on UV absorbance spectrum.
Week Eight:	Mid-Term EXAM
Week Nine:	Amino acids and proteins Unit 5: Identification of an unknown amino acid by color test and TLC Chromatography; Isolation of casein from milk by isoelectric point titration, Color test of protein
Week Ten:	Amino acids and proteins Unit 5: Polyacrylamide Gel Electrophoresis for determination of molecular weight of proteins of Casein
Week Eleven: Topic	DNA finger printing and paternity determination Unit 6: DNA Fingerprinting principle
Week Twelve: Topic	Nucleic Acids Unit 6: Paternity determination by DNA finger printing
Week Thirteen: Topic	Enzymes Unit 7: Salivary Amylase Activity and product determination Monitoring Hydrolysis of starch by salivary amylase and identification of product
Week Fourteen: Topic	Enzymes

Unit 7: Study of the properties of beta-galactosidase and Determination of V_{max} , K_m , K_i

Week Fifteen

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):

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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/> 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.