BIOL 4475–110, CRN: 80361, PROTEOMICS

Fall 2023
Texas A&M University-Central Texas

COURSE DATES, MODALITY, AND LOCATION

INSTRUCTOR AND CONTACT INFORMATION

This course meets face-to-face, with supplemental materials made available online through the A&M-Central Texas Canvas Learning Management System [https://tamuct.instructure.com/].

Course Dates: August 28 - December 15, 2023
Lecture: Tuesday & Thursday 9:30 AM - 10:45 AM, Warrior Hall 312
Laboratory: Tuesday 11.15 AM – 2.15 PM, Heritage Hall 315

Instructor: Dr. Chamindika Siriwardana
Office: 302G Heritage Hall
Phone: 254-519-8717
Email: c.siriwardana@tamuct.edu

Office Hours

Monday 11.00 AM – 2.00 PM. I am available for students on an appointment basis. If you need a WebEx meeting or in-person meeting, please contact me by Canvas Inbox to set up an appointment 24 hours in advance.

Student-instructor interaction

Email: Important information about the class will be communicated via email. All students must have an active email account that is checked daily. I try to answer all emails the day I get them, but if you get no answer in 24hrs please resend it. Please write "BIOL 4372- (type your specific topic here)" in the subject line of the email. This tells me to prioritize your message because it is course related.

Emergency Warning System for Texas A&M University-Central Texas

SAFEZONE. SafeZone provides a public safety application that gives you the ability to call for help with the push of a button. It also provides Texas A&M University-Central Texas the ability to communicate emergency information quickly via push notifications, email, and text messages. All students automatically receive email and text messages via their myCT accounts.

Downloading SafeZone allows access to push notifications and enables you to connect directly for help through the app.

You can download SafeZone from the app store and use your myCT credentials to log in. If you would like more information, you can visit the SafeZone website [www.safezoneapp.com].

To register SafeZone on your phone, please follow these 3 easy steps*:*
1. Download the SafeZone App from your phone store using the link below:
    o   iPhone/iPad: [https://apps.apple.com/app/safezone/id533054756]
    o   Android Phone / Tablet
        [https://play.google.com/store/apps/details?id=com.criticalarc.safezoneapp]
2. Launch the app and enter your myCT email address (e.g. {name}@tamuct.edu)
3. Complete your profile and accept the terms of service

For updates on COVID information, please monitor the University website
[https://www.tamuct.edu/covid19/]

COURSE INFORMATION

Course Overview and description

Proteomics (BIOL-4475-110) is an undergraduate level, 4-credit, course offered by the Department of Science and Mathematics. It is a combined lecture and laboratory course.

In the course, students will study the theory and practice of current techniques in protein analysis including separation, quantification, sequencing, and identification. Current research advances and case studies will also be examined.

Prerequisite(s): BIOL 4470.

Course Objective or Goal
Student Learning Outcomes

At the end of this course students will:
1. Understand the theory of protein analysis techniques.
2. Explain the chemistry underlying the biological processes involving proteins.
3. Understand the practical application of proteomic studies.
4. Master basic techniques in proteomics lab and demonstrate ability to write scientific lab reports.

Required Reading and Textbook(s)
Twyman R. 2013. Principles of Proteomics. 2nd ed. Garland Science. ISBN-13:978-0815344728.

COURSE REQUIREMENTS

Assignment/ Assessment Type	Percentage	Assignment/Assessment	Points	SLOs
Exams	55%	**Quizzes** (8 X 5 points)	**40**	**1-3**
		Final Exam	**15**	**1-3**
Participation	20%	**Presentation**	**10**	**1-3**
		Literature Review	**10**	**1-3**

Laboratory	25%	**Lab Reports** (5 X 5 points)	**25**	1-4
Course Total	**100%**		**100**	

Quizzes:
We will have eight 10-15 min. quizzes at one to two-week intervals, which will be notified beforehand. Each quiz will be worth five points. A quiz will include material you learned until the previous quiz. I will not quiz you on nitty-gritty details that anyone with the proper knowledge can look up online or at a library but test if you understood the concepts. Combined the quizzes will contribute to the largest portion of your grade so make sure you do not miss them.

Presentations:
Each student will make a 10-15-minute presentation. You will select and present a paper of your choice related to proteomics from a high-ranking journal. You will have to submit your paper two weeks in advance and must be approved.

Lab Reports:
At the end of each experiment, you will write a lab report based on the experiment. Plagiarism is a serious offense, and any instances of plagiarism will result in action against the offending student(s).

Literature Review:
Each student will write a review paper on a topic related to proteomics. For the current semester, the topic will be a review of the SARS-CoV-2 protein interaction map.

Final Exam:
The final exam will cover all subject matter learned during the semester. The final exam will be a take-home exam and will be posted on Canvas. The final exam is due on the last day of class.

Writing in the Biological Sciences Tutorials:
The writing in biological sciences tutorials are posted on the Canvas home page. These tutorials are uniform across the Department of Biology at TAMUCT. Please refer to these tutorials for writing assignments such as the lab reports, literature review report, final exam and extra credit.

Grading Criteria Rubric and Conversion

A 4.00 (90 +) Achievement is outstanding relative to the level necessary to meet course requirements.
B 3.00 (80-89%) Achievement that is significantly above the level necessary to meet course requirements.
C 2.00 (70–79%) Achievement that meets the course requirements in every respect.
D 1.00 (60–69%) Achievement that is worthy of credit even though it fails to meet fully course requirements.

F 0.00 (less than 60%) Represents failure and signifies that the work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not completed and there was no agreement between the instructor and the student that the student would be awarded an "I" (incomplete).

I (Incomplete) The "I" shall be assigned at the discretion of the instructor when, due to extraordinary circumstances, the student was prevented from completing the work of the course on time. The assignment of an "I" requires a written agreement between the instructor and student specifying the time and manner in which the student will complete the course requirements. In no event may any such written agreement allow a period of longer than one year to complete the course requirements. For graduate and professional students, an "I" is to remain on the transcript until changed by the instructor or department. For all other students, work to make up an I must be submitted within one year of the last day of final examinations of the term in which the "I" was given; if not submitted by that time, then the "I" will automatically change to an F. To obtain an incomplete you must have been doing passing work in the course.

Posting of Grades

All grades will be posted on the Canvas grade book within one week of the due date for the exam/assignment.

Grading Policies

Read these carefully as I am strict with my policies.

Grading Policy and Point Breakdown: Grades in this course will be criteria-based on a number of activities including exams and projects. This means that grades will not be curved and anyone achieving a 90% or above will receive an A in this course.

Grade Dispute Policy: Grading disputes must be put in writing (with justification such as supporting statements from the text or another credible source) and given to me no earlier than 24 hours after the assignment has been returned. I will consider your request carefully but reserve the right to adjust your grade up or down.

Assignments: These will be varied in nature, but will consist of activities that cause the students to reflect upon the state of knowledge of the topic of the week, how that topic is perceived in the media, and/or analysis of specific research projects relevant to the subject. All assignments are to be turned in, on time (i.e. at class time on due date), to the Canvas website. I will not accept e-mailed assignments of any kind.

Late Assignments: I expect all assignments to be turned in on time. Late assignments interfere with my ability to provide timely, detailed feedback, as well as with your ability to learn and process new material. Accordingly, any unauthorized late assignment will receive a 5% reduction in grade for each day it is late. No assignments will be accepted after it has been graded and returned.

Exams/Quizzes: The exams/quizzes will be a mixture of matching, multiple-choice and short answers, designed to provoke reflection, critical thought, and application of knowledge. You will receive a list of several samples or real exam questions ahead of time. You are encouraged to prepare for the exam by reviewing reading materials, outlining a draft of a response, and

discussing these thoughts with your peers. You will then demonstrate your individual, integrated thoughts on the topic in a closed-book exam during the class period.

Missed exams: If you know you will miss an exam, please contact me BEFORE the exam. I will gladly give make-up exams if the student has an unavoidable reason for missing the exam (i.e. death in the family, severe illness). Keep in mind that I will expect documentation of your reason for missing the exam (e.g. doctor's note, obituary notice). Exams must be made up within a week of the originally scheduled date, with no exceptions regardless of excuse.

COURSE OUTLINE AND CALENDAR

Complete Course Calendar

Week	Lecture Topic	Laboratory Topic
1 (8/29-8/31)	Introduction to the course **Part 1: Proteins** Proteins - Biochemistry	Safety Training Making protein gels for the semester
2 (9/5-9/7)	Proteins – Molecular Biology	**Experiment 1. Comparative Proteomics: SDS-Page gel** Protein extraction from fish
3 (9/12-9/14)	Proteins - Molecular Biology **Part 2: Core Methodology** Introduction to Proteomics (Chapter 1) Q1 9/12	SDS-Page and Phylogenetic tree construction
4 (9/19-9/21)	Introduction to Proteomics (Chapter 1) Experimental Design & Sample Preparation **Quiz 2, 9/19**	**Experiment 2: Comparative Proteomics: Western Blot** SDS-Page and Western Blot/ **Lab Report 1 due**
5 (9/26- 9/28)	Protein Separation (Chapter 2)	Development of Western blot
6 (10/3-10/5)	Protein Separation (Chapter 2) **Quiz 3, 10/3** **MS**	**Experiment 3: Gateway Cloning** PCR amplification/ **Lab Report 2 due**
7 (10/10-10/12)	MS analysis **Quiz 4, 10/12**	TOPO reaction and transformation
8 (10/17-10/19)	Antibodies & Edman Degradation Data Analysis & protein identification	Plasmid extraction
9 (10/24-10/26)	**Student Presentations on 10/24 & or 10/26**	LR reaction & transformation
10 (10/31-11/2)	**Part 3: Validation** DNA cloning **Quiz 5 (10/31)**	Plasmid extraction
11 (11/7-11/9)	Gene editing	**Experiment 4: Yeast 2-hybrid (Y2H)** Transformation/ **Lab Report 3 due**
12 (11/14 –11/16)	Interaction Proteomics **Quiz 6 (11/14)**	Colony selection & plate setup
13 (11/21)	Bioinformatics	Plate cleaning/LacZ expression

		observation
14 (11/28-11/30)	**Part 4: Protein Microarrays** **Quiz 7 (11/28)**	Y2H plate observations
15 (12/5-12/7)	**Part 5: Applications of Proteomics** **Quiz 8 (12/7)**	**Experiment 5: CRISPR-Cas9** Virtual lab/ **Lab Report 4 due**
12/12	**Final Exam/ Literature Review due/ Lab Report 5 due**	

Important University Dates
Link to the current academic calendar: https://www.tamuct.edu/registrar/academic-calendar.html

TECHNOLOGY REQUIREMENTS AND SUPPORT

Technology Requirements

This course will use the A&M-Central Texas Instructure Canvas learning management system. We strongly recommend the latest versions of Chrome, Firefox, Edge, or Safari browsers. Canvas will run on Windows, Mac, Linus, iOS, android, or any other device with a modern web browser. **Canvas no longer supports any version of Internet Explorer.**

Logon to A&M-Central Texas Canvas [https://tamuct.instructure.com/] or access Canvas through the TAMUCT Online link in myCT [https://tamuct.onecampus.com/] by clicking on the "TAMUCT Online Canvas" tile. You will then log in through our Microsoft portal.

   Username: Your MyCT email address. Password: Your MyCT password

Canvas Support

Use the Canvas Help tab, located at the bottom of the left-hand menu, for issues with Canvas. You can search the support articles or use the Email, Call, or Chat buttons at the bottom of the support pop-up to contact the Canvas Help Desk.

For issues related to course content and requirements, contact your instructor.

Online Proctored Testing

Texas A&M University-Central Texas uses Proctorio for online identity verification and proctored testing. This service is provided at no direct cost to students. If the course requires identity verification or proctored testing, the technology requirements are: Any computer meeting the minimum computing requirements, plus web camera, speaker, and microphone (or headset). Proctorio requires use of the Chrome web browser with their custom plug in installed.

Other Technology Support

For log-in problems, students should contact Help Desk Central, 24 hours a day, 7 days a week.

   Email: helpdesk@tamu.edu
   Phone: (254) 519-5466
   [Web Chat](http://hdc.tamu.edu): [http://hdc.tamu.edu]

Please let the support technician know you are an A&M-Central Texas student.

UNIVERSITY RESOURCES, PROCEDURES, AND GUIDELINES

Warrior Center for Student Success
The Warrior Center for Student Success is a comprehensive academic support department at A&M-Central Texas, dedicated to fostering an environment of excellence and empowerment among its student body. The center offers a wide range of programs and services to ensure every student reaches their full potential, and is a haven for students seeking guidance, resources, and a strong support network to excel in their educational journey.

ADA Access and Accommodations: Texas A&M University-Central Texas ensures that students with disabilities have equal access to educational opportunities by providing appropriate accommodations and support services. If you believe you have a physical, learning or socio-emotional disability requiring reasonable accommodations, please visit Access and Inclusion [https://www.tamuct.edu/student-affairs/access-inclusion.html] for more details or contact the Office of Access and Inclusion, WH-212; (254) 501-5836. Any information you provide is private and confidential.

Success Coaching and Peer Mentoring: Our experienced Success Coaches work one-on-one with students to develop personalized action plans, set academic goals, and build effective study strategies, time management skills, and resilience. Our Peer Mentors provide a valuable support system, offering guidance, encouragement, and a relatable perspective to help students navigate their academic and personal challenges. For more details call 254-501-5836 or 254-501-5928 or visit Academic Support [https://www.tamuct.edu/student-affairs/academic-support.html]. Click the link to schedule a session (virtual or in-person) with a success coach bit.ly/3q7uB50 or visit WH, 111.

Testing Services: We offer a secure and comfortable environment for students and members of the community to take courses and distance learning exams, as well as placement tests and professional certification exams. Our Testing Service also offers resources and support referrals for testing related challenges (test anxiety, learning disabilities, etc.) and supports all approved ADA accommodations. Call (254) 519-5830 or visit the Testing Center [https://www.tamuct.edu/testing-center/].

Tutoring and Supplemental Instruction Services: Our team of qualified Tutors and Supplemental Instructors assist students in various non-writing subjects, promoting academic comprehension and enhancing learning outcomes. Click the link to schedule a tutoring session with a TAMUCT tutor (virtual or in-person) or view tutor availability bit.ly/43Q6wNz. You may also chat live with a remote tutor 24/7 for a variety of subjects through our partnership with Tutor.com, an online tutoring platform that is free to all TAMUCT students. To learn more please visit Tutoring Services [https://www.tamuct.edu/student-affairs/academic-support.html#tutoring] or call (254) 501-5836 or visit the Tutoring Hub in Warrior Hall, 111.

Academic Integrity

Texas A&M University-Central Texas values the integrity of the academic enterprise and strives for the highest standards of academic conduct. A&M-Central Texas expects its students, faculty, and staff to support the adherence to high standards of personal and scholarly conduct to preserve the honor and integrity of the creative community. Any deviation by students from this expectation may result in a failing grade for the assignment and potentially a failing grade for the course. All academic misconduct concerns will be referred to the Student Conduct Office. When in doubt on collaboration, citation, or any issue, please contact your instructor before taking a course of action.

For more information regarding the student conduct process, [https://www.tamuct.edu/student-affairs/student-conduct.html].

If you know of potential honor violations by other students, you may submit a referral, [https://cm.maxient.com/reporting.php?TAMUCentralTexas].

Drop Policy

If you discover that you need to drop this class, you must complete the Drop Request Dynamic Form through Warrior Web.

[https://federation.ngwebsolutions.com/sp/startSSO.ping?PartnerIdpId=https://eis-prod.ec.tamuct.edu:443/samlsso&SpSessionAuthnAdapterId=tamuctDF&TargetResource=https%3a%2f%2fdynamicforms.ngwebsolutions.com%2fSubmit%2fStart%2f53b8369e-0502-4f36-be43-f02a4202f612].

Faculty cannot drop students; this is always the responsibility of the student. The Records and Admissions Office will provide a deadline on the Academic Calendar for which the form must be completed. Once you submit the completed form to the Records and Admissions Office, you must go into Warrior Web and confirm that you are no longer enrolled. If you still show as enrolled, FOLLOW-UP with the Records and Admissions Office immediately. You are to attend class until the procedure is complete to avoid penalty for absence. Should you miss the drop deadline or fail to follow the procedure, you will receive an F in the course, which may affect your financial aid and/or VA educational benefits.

Pregnant and/or Parenting Students Rights and Accommodations

Texas A&M University-Central Texas supports students who are pregnant, experiencing pregnancy-related conditions, and/or parenting. In accordance with requirements of Title IX and related guidance from US Department of Education's Office of Civil Rights, the Associate Dean in the Division of Student Affairs, (254) 501-5909, can assist students who are pregnant, experiencing pregnancy-related conditions, and/or parenting by provide flexible and individualized reasonable accommodations. Students should seek out assistance as early in the pregnancy as possible through the Pregnancy & Parenting webpage [https://www.tamuct.edu/student-affairs/pregnant-and-parenting-students.html]. For more information, please visit Student Affairs [https://www.tamuct.edu/student-affairs/pregnant-and-parenting-students.html]. If you would like to read more about these requirements and

guidelines online, please visit the website
[http://www2.ed.gov/about/offices/list/ocr/docs/pregnancy.pdf].

Title IX of the Education Amendments Act of 1972 specifically prohibits discrimination against a student based on pregnancy, childbirth, false pregnancy, termination of pregnancy, or recovery from any of these conditions
[https://www2.ed.gov/about/offices/list/ocr/docs/pregnancy.html].

Students experiencing any form of discrimination due to any of these conditions are encouraged to reach out to the Title IX Coordinator, 254.519.5716, titleix@tamuct.edu, Founders Hall 317B, or the Associate Dean of Student Affairs, 254.501.5909, Warrior Hall 105.

Title IX Rights and Reporting Responsibilities

Texas A&M University-Central Texas is committed to creating a safe and open learning environment for all students. If you or another student has experienced any form of gender discrimination or sexual misconduct, including sexual harassment, sexual assault, dating/domestic violence, and/or sex-based stalking, help and support are available. Our university strongly encourages all members of our campus community to report incidents and seek support for gender discrimination and sexual misconduct through the Title IX Office. You may contact the Title IX Office at 254.519.5716, titleix@tamuct.edu, Founders Hall 317B, or learn more by visiting the Title IX webpage [https://www.tamuct.edu/compliance/titleix.html].

Please be aware that that under Title IX, Texas Senate Bill 212, and System Regulation 08.01.01, [https://policies.tamus.edu/08-01-01.pdf] all university employees are mandated reporters and are required to disclose information about suspected or alleged violations as listed above and defined in System Regulation 08.01.01. If the Title IX Office receives information about an incident, they will reach out to offer information about resources, rights, and procedural options as a member of the campus community. Although I have an obligation to report, you will, in most cases, control how your case will be handled. When working with the Title IX Office you will have access to resources and accommodations but also have the opportunity to express if you wish to move forward with an investigation. Our goal is to make sure you are aware of the options available to you as a student. Community members are not required to respond to this outreach.

If you or another student wishes to speak to a confidential employee who does not have this reporting responsibility, you can contact the Student Wellness & Counseling Center, [https://www.tamuct.edu/student-affairs/student-counseling.html], 254.501.5955, or swacc@tamuct.edu, located in Warrior Hall Room 207L or the Student Support Advocate, 254.501.5978 or ssa@tamuct.edu, located in founder Hall Room 317D.

University Library & Archives

The University Library & Archives provides many services in support of research across campus and at a distance. We offer over 350 electronic databases containing approximately 1,203,947 eBooks and 134,750 journals, in addition to the 96,879 items in our print collection, which can be mailed to students who live more than 50 miles from campus. Research guides for each subject taught at A&M-Central Texas are available through our website to help students

navigate these resources. On campus, the library offers technology including cameras, laptops, microphones, webcams, and digital sound recorders.

Research assistance from a librarian is also available 24 hours a day through our online chat service, and at the reference desk when the library is open. Research sessions can be scheduled for more comprehensive assistance, and may take place virtually through WebEx, Microsoft Teams or in-person at the library. Schedule an appointment here

[https://tamuct.libcal.com/appointments]. Assistance may cover many topics, including how to find articles in peer-reviewed journals, how to cite resources, and how to piece together research for written assignments.

Our 27,000-square-foot facility on the A&M-Central Texas main campus includes student lounges, private study rooms, group workspaces, computer labs, family areas suitable for all ages, and many other features. Services such as interlibrary loan, TexShare, binding, and laminating are available. The library frequently offers workshops, tours, readings, and other events. For more information, please visit our Library website

[https://tamuct.libguides.com/index]

University Writing Center

Located in Warrior Hall 416 and online, the University Writing Center (UWC) at Texas A&M University–Central Texas (A&M–Central Texas) is a free service open to all A&M–Central Texas students. The face-to-face hours of operation are from 10:00 a.m.-5:00 p.m. Monday and Thursday in Warrior Hall 416. Online tutoring is available Monday thru Thursday from 10:00 a.m.-5:00 p.m. and from 6:00-9:00 p.m. and on Saturdays from 12:00-3:00 p.m.

Tutors are prepared to help writers of all levels and abilities at any stage of the writing process. While tutors will not write, edit, or grade papers, they will assist students in developing more effective composing practices. By providing a practice audience for students' ideas and writing, our tutors highlight the ways in which they read and interpret students' texts, offering guidance and support throughout the various stages of the writing process. In addition, students may work independently in the UWC by checking out a laptop that runs the Microsoft Office suite and connects to WIFI, or by consulting our resources on writing, including all of the relevant style guides. Whether you need help brainstorming ideas, organizing an essay, proofreading, understanding proper citation practices, or just want a quiet place to work, the UWC is here to help!

Students may arrange a one-to-one session with a trained and experienced writing tutor by making an appointment via WCOnline [https://tamuct.mywconline.com/]. In addition, you can email Dr. Bruce Bowles Jr. at bruce.bowles@tamuct.edu if you have any questions about the UWC, need any assistance with scheduling, or would like to schedule a recurring appointment with your favorite tutor.

OTHER POLICY STATEMENTS

A Note about Sexual Violence at A&M-Central Texas

Sexual violence is a serious safety, social justice, and public health issue. The university offers support for anyone struggling with these issues. University faculty are mandated reporters, so if someone discloses that they were sexually assaulted (or a victim of Domestic/Dating Violence or Stalking) while a student at TAMUCT, faculty members are required to inform the Title IX Office. If you want to discuss any of these issues confidentially, you can do so through Student Wellness and Counseling (254-501-5955) located on the second floor of Warrior Hall (207L).

Sexual violence can occur on our campus because predators often feel emboldened, and victims often feel silenced or shamed. It is incumbent on ALL of us to find ways to actively create environments that tell predators we don't agree with their behaviors and tell survivors we will support them. Your actions matter. Don't be a bystander; be an agent of change. For additional information on campus policy and resources visit the Title IX webpage [https://www.tamuct.edu/compliance/titleix.html].

Behavioral Intervention

Texas A&M University-Central Texas cares about the safety, health, and well-being of its students, faculty, staff, and community. If you are aware of individuals for whom you have a concern, please make a referral to the Behavioral Intervention Team. Referring your concern shows you care. You can complete the referral online

[https://cm.maxient.com/reporting.php?TAMUCentralTexas].

Anonymous referrals are accepted. Please see the Behavioral Intervention Team website for more information [https://www.tamuct.edu/bit]. If a person's behavior poses an imminent threat to you or another, contact 911 or A&M-Central Texas University Police at 254-501-5805.

OTHER POLICIES

SCIENCE POLICIES

Lecture courses

Exams:

1. There will be no bathroom breaks allowed during any exam. Be sure that you address this issue before beginning an exam.
2. Any student needing to take an exam at a different time as rest of students due to sickness or other accommodations will receive a different version of exam. This includes sickness, special accommodations, etc…
3. All students needing special accommodations must submit an accommodation form from the Office of Access and Inclusion listing the specific accommodations needed. Students are responsible for scheduling their own exam times with the TAMUCT Testing Center.

4. Any student missing an exam in class for any other reason (i.e. illness, death in family, etc...) must provide documentation for missing the exam (e.g. doctor's note, obituary notice, etc...). Exams must be made up within one week of original scheduled date, no exceptions.
5. All backpacks and materials as well as cell phones, smart watches and other electronic devices, must be turned off and placed at the front of the room on test day.
6. Jackets, sweaters, etc must be placed in the front of the room on test day, unless otherwise indicated by teacher.

Laboratory courses

Attendance policy:

1. A maximum of 3 absences will be allowed; additional absences in lab will result in an "F" for the entire course, regardless of excuse. In extreme circumstances, discuss with instructor BEFORE you reach 3 absences.

Laboratory Safety training

1. All students are required to take the mandatory Laboratory Safety Training Module - found on in your Modules tab in CANVAS. You must take the training and bring the signed "Safety Agreement Form" to your instructor before you are allowed in lab!!! This is YOUR RESPONSIBILITY - any lab absences because you have not taken the training will be considered unexcused!

Laboratory Coats
1. Students are required to purchase a laboratory coat from the TAMUCT Hanik Bookstore in Founder's Hall. Students must keep their laboratory coat in the laboratory room (you will be provided a storage bag); you cannot transport coats from lab to lab or bring outside the laboratory.

INSTRUCTOR POLICIES.

What I expect of you. To get the most out of this class, you are expected to conduct yourself in a professional manner, which includes contributing to class discussions, being punctual, and notifying me of absences in advance.

Class Attendance. I expect that you attend each class session and arrive on time. If an unavoidable situation arises that prevents you from attending class, I expect that you also promptly contact me to discuss the missed material and get the notes from a classmate. I will not distribute my notes to students as they are often abbreviated and do not contain the detail needed to sufficiently understand the material.

What you can expect of me. You can expect me to start and end class on time, be available through office hours, e-mail, and by appointment, be responsive to student suggestions for course improvement, answer questions to the fullest extent possible and/or direct you to

appropriate resources, return graded assignments and exams within a reasonable time frame, and treat you with respect as future colleagues.

Discussion. The topics in this class encompass a diversity of issues that merit in-depth thought and discussion. Since individuals will be expressing their opinions, I expect that will you respect others' contributions, as you would want them to do for you.

Credits and Workload expectations. For undergraduate courses, one credit is defined as equivalent to an average of two hours of learning effort per week (over a full semester) necessary for an average student to receive an average grade for the course. A student taking a four-credit class that meets for four hours a week should expect to spend an additional eight hours a week outside the classroom to earn an average grade.

Class Structure. Classes will involve a balance of active lectures and engaging learning activities. I believe that students learn the theories and concepts much better when they have an active role. I know that this may be new to some of you, but please keep an open mind and I know that you will get more out of this class because of it.

Copyright Notice

Instructions for the Research Paper Presentation

Each student will give a short PowerPoint presentation during the semester. The following guidelines describe the objectives and assignment.

Objectives
1. Read and critically analyze high impact research publications in proteomics.
2. Communicate confidently and constructively.

Subject
Each student will present the data from <u>one</u> published paper obtained from the following list of acceptable journals:

- Proteomics https://analyticalsciencejournals.onlinelibrary.wiley.com/journal/16159861
- Journal of Proteomics https://www.journals.elsevier.com/journal-of-proteomics
- Molecular and Cellular Proteomics https://www.mcponline.org/ (Open Access)
- Journal of Proteome Research https://pubs.acs.org/journal/jprobs (Open Access)

Review articles are **NOT** suitable for this assignment.

Presentations
Each presentation should give a brief background and introduction to the problems addressed in the paper, a description of the actual findings, and overall conclusions. Presentations should be about **10 - 15 minutes in length** with 1-2 minutes left for audience questions. Talks that are excessively under/over time will lose points in grading. **NOTE**: To get the timing and delivery right, **presentations require practice**. Further, you will not be able to relax and present the material in a conversational tone if you have not practiced ahead of time. The following web links have quite a bit of excellent information on giving a good talk - read and follow this advice! **Especially note the concepts of "zooming in" and "telling a story."**

http://www.ibiology.org/ibioseminars/techniques/susan-mcconnell-part-1.html

Presentation Sections and Grading Rubric
The following list is the generally expected format for each presentation. When preparing and practicing your talk, be sure to check over this guide.

Title Slide: (5%)
This slide should give the title and author(s) of the paper covered, your name, and the name of the class.

Introduction: (25%)
The introduction should include:
1) A brief and succinct outline of the presentation
2) Appropriate background information to introduce the larger problem - you will likely need to obtain information from a few previous papers and/or a review paper or two to adequately

introduce your subject (Cite any background papers in small font at the bottom of the slide where introduced)

3) A sense of "zooming in" to the more narrow question(s) addressed in the paper

Data Presentation: (25%)

1) After introducing and zooming in to the specific problem in your paper, the majority of your talk should present the actual data, implementation of the bioinformatic tools, etc. **NOTE**: You do not have to present every figure or piece of information from the paper! Pick and choose the essential information that will help you tell a good story.

2) Each slide should present one piece of data/information from the paper (i.e., do not overly complicate individual slides)

3) Each graph, table, graphic, etc. should be carefully explained in detail in a sensible order ("This graph shows the following…,the X-axis shows…, the Y-axis shows…")

4) There should be a clear sense of flow from one slide to the next ("This data showed the following…Next, the authors wished to address…" CLICK to next slide.

Overall Conclusions: **(10%)**

If you have built a flowing, zooming in narrative through the Introduction and Data sections of your talk, the Conclusions will flow easily and simply reinforce what your readers have already heard - this portion of the talk should not exceed 2 slides (and may only be a single slide).

Future Directions and Finality: (5%)

Future directions should be a single slide with 1-2 ideas for the next questions to be addressed - these can be taken from the paper or can be your own thoughts on where this work should proceed. Be concise and thoughtful here. **Finality** - don't leave us hanging! When the talk is over, let us know - the easiest way to do this is with a simple declaration of finality, such as "That's everything I wanted to cover today. I would be happy to answer any questions."

Preparation and Overall Style: (30%)

1. Obviously know the material
2. Clearly prepared thoughts for each slide
3. The talk flows - clear segues (i.e., connections) between slides
4. Speak clearly with your body, voice, and eyes directed towards your audience
5. Slides should be attractive and easily read - remember, colorful can be nice, but avoid unnecessarily flowery slides. Also, dark text against dark backgrounds and light against light is hard to see - pay careful attention to easily seen, contrasting images and text.
6. Overall confident and assertive speaking style - everyone has their own style, but confidence flows easily when you know the material and have practiced your talk
7. Timing – 10-15 minutes! Points off for too short or long

Grading rubric for the research paper presentation

Category	Exceeds expectations	Meet expectations	Below expectations	Does not meet expectations	Score
Title Slide	All the following are included; (1) Title, (2) author(s), (3) your name, (4) name of the class.	All the following are included; (1) Title, (2) author(s), (3) your name, (4) name of the class.	Only two to three of the four components are included.	Less than two components are included, or no title slide is provided.	5
Introduction	(1) Appropriate background information to introduce the larger problem. (2) Cites relevant past publications.	Appropriate background information from the paper presented. Does not cite other relevant publications.	Background information is provided; however, it is inadequate for the listener follow the presentation.	The background information provided does not corelate with the presentation.	25
Data Presentation	(1) Each slide presents one piece of data/ information from the paper. (2) Each graph, table is carefully explained in detail in a sensible order.	(1) Each slide presents one piece of data/ information from the paper. (2) Each graph, table is carefully explained.	(1) there are multiple pieces of data/ information in one slide (2) Graphs and tables are explained inadequately (no mention of x and Y axis etc.)	(1) there are multiple pieces of data/ information in one slide (2) Graphs and tables are not explained.	25
Overall Conclusions	Reinforce what the listeners have already heard in a logical manner. Does not exceed 1-2 slides.	Reinforce what the listeners have already heard.	The conclusion does not succinctly address the research paper that was discussed.	The conclusion does not corelated with the presentation.	10
Future Directions and Finality	Clearly defines future directions both (1) from the paper and (2) your own thoughts. When the talk is over lets the audience know.	Clearly defines future directions from the paper.	Future directions are not clearly defined.	No future directions are provided.	5
Preparation and overall style	(1) Obviously knows the material, (2) Clearly prepared thoughts for each slide, (3) The talk flows with clear segues between slides (4) Speak clearly with your body, voice, and eyes directed towards your audience, (5) slides are attractive and easy to read, (6) Overall confident and assertive speaking style, (7) Timing is ± 2 minutes of allocated time.	(1) Knows the material, (2) Clearly prepared thoughts for each slide, (3) The talk flows, however, some segues between slides are not clear (4) Speak clearly with your body, voice, and eyes directed towards your audience, (5) slides are attractive and easy to read, (6) Overall confident and assertive speaking style, (7) Timing is ± 4 minutes of allocated time.	(1) Some knowledge of the material, (2) The talk flow, and segues between slides are not clear (3) Speak clearly, however, only some eye contact is maintained. (4) slides are not very clear, (5) Somewhat confident and assertive speaking style, (7) Timing is ±5 minutes of allocated time.	(1) inadequate knowledge of the material, (2) The talk does not flow, and segues between slides are lacking (4) Does not speak clearly and eye contact is not maintained. (5) slides are not very clear, (6) Lacks confident and assertive speaking style, (7) Timing is more than ±5 minutes of allocated time.	30
Total					100

Instructions for the Literature Review

Each student will write an independent literature review to address the research question related to proteomics. To complete this assignment students will:

1. Conduct a literature survey on PubMed and/or Google Scholar.
2. Visit relevant bioinformatics databases (e.x. NCBI https://www.ncbi.nlm.nih.gov/)
3. Critically analyze the publications and data.
4. Write a REVIEW report based on your findings.

The topic for the current semester will be "a review of the SARS-CoV-2 protein interaction map". A detailed breakdown of each step is given below.

1. Literature survey.
   a. A good resource would be PubMed and/or Google Scholar.
   b. Read both research publications and review publications. An example of keywords for a search includes "sars-cov-2 protein interaction map". In PubMed you will be able to specify "Review" under the heading "Article Type".
   c. Remember to cite all work that was referred in your report.
2. Bioinformatic Databases.
   a. A good resource would be NCBI https://www.ncbi.nlm.nih.gov/
   b. Use NCBI to obtain the protein structure of the SARS-CoV-2 protein https://www.ncbi.nlm.nih.gov/structure?db=structure&cmd=search&term=(%232)%20AND%20(structure_cdd_family_2[filt])&loc=s_frm
   c. and study protein-protein interactions https://www.ncbi.nlm.nih.gov/structure?db=structure&cmd=search&term=sars-cov-2%20protein%20AND%20(complex_protein[filt])&loc=s_frm
   d. Remember to cite all work that was referred in your report.
3. Critical Analysis.
4. Report.

The report should be written as review article. The report should be between one to five pages long.

The writing in biological sciences tutorials is posted on the Canvas home page. These tutorials are uniform across the Department of Biology at TAMUCT. Please refer to these tutorials for instructions on writing the literature review and citations.

Grading rubric for Literature Review

Category	Exceeds expectations	Meet expectations	Below expectations	Does not meet expectations	Score
Title and author	Includes descriptive title & author.	Includes semi-descriptive title and author.	Non-descriptive title and author.	(1) Non-descriptive title. (2) The title and/or author are not included.	5
Abstract	(1) No more than ½	(1) No more than ½	(1) Excessive	(1) Excessive	

Category	Exceeds expectations	Meet expectations	Below expectations	Does not meet expectations	Score
	page in length (2) Succinct overview includes all four major components of the review - introduction, review, conclusion and future directions.	page in length (2) Succinct overview includes at least three components of the review - introduction, review, conclusion and future directions.	information/ length (2) Omits major components of the review.	information or no abstract. (2) Omits major components of the review.	
Introduction	(1) Appropriate background information to introduce the larger problem. (2) Cites relevant past publications. (3) Includes protein structures.	Appropriate background information from the paper presented. Does not cite other relevant publications and/or protein structures.	Background information is provided; however, it is inadequate. Does not cite other relevant publications and/or protein structures.	The background information provided does not correlate report. Does not cite other relevant publications and/or protein structures.	25
Review	(1)In-depth discussion & elaboration in all sections of the review. (2) At least four research publications are included. (3) At least two appropriate images/ interaction networks are included.	In-depth discussion & elaboration in most sections of the review. (2) At least three research publications are included. (3) At least one appropriate image/ interaction network is included.	Omission of pertinent content or content runs on excessively. Quotations from others outweigh the writer's ideas. (2) Three or two research publications are included. (3) No appropriate images/ interaction networks are included.	Cursory discussion in all the sections of the paper or brief discussion in only a few sections. (2) Only one research publication is discussed. (3) No appropriate images/ interaction networks are included.	25
Conclusion & Future Directions	The conclusion is engaging and restates the thesis. Relates topic to 'real-world applications (e.g., medicine)	The conclusion restates the thesis.	The conclusion does not adequately restate the thesis.	An incomplete statement or confusing.	15
References	(1)A uniform standard format (e.g. CSE format). (2) More than Six references.	(1)A uniform standard format (e.g. CSE format). (2) Six references.	Five to two references.	One or no references.	30
Total					100

Instructions for the Laboratory Reports

The writing in biological sciences tutorials is posted on the Canvas home page. These tutorials are uniform across the Department of Biology at TAMUCT. Please refer to these tutorials for instructions on writing lab reports and citations.

Grading rubric for the Laboratory Reports

Category	Exceeds expectations	Meet expectations	Below expectations	Does not meet expectations	Score
Title	Includes descriptive title	Includes descriptive title	Non-descriptive title	(1) Non-descriptive title. (2) The title is not included.	5
Abstract	(1)50-150 words. (2)	At least one	Missing at least one	Missing more than	15

	at least one sentence describing background, question, methods, results & discussion.	sentence describing background, question, methods, results & discussion.	of the following components: background, question, methods, results & discussion.	one of the following components: background, question, methods, results & discussion.	
Introduction	(1) Clearly and concisely states the purpose of the experiment. Engaging and thought-provoking. (2) Relevant background (3) Discusses what is currently known and unknown. (4) narrow down to specific topic (funnel structure) (5) citations	(1) Clearly and concisely states the purpose of the experiment. Engaging and thought-provoking. (2) Relevant background (3) Discusses what is currently known and unknown. (4) citations	(1) States the purpose of the experiment. (2) some background information (3) lacks structure.	(1) Incomplete statements or confusing. (2)Lacks background information (3) Lacks structure.	20
Materials & Methods	The methods are written in such a way that, an independent researcher can read the methods and perform the experiment.	All methods are clearly written.	The methods are written in a way that an independent researcher will have difficulty in performing the experiment.	The methods are written in a way that an independent researcher will not be able to perform the experiment.	10
Results	(1) Paragraph style narrative of results. (2) First paragraph contains main finding. (3) No interpretations.	Paragraph style narrative of results	(1) Paragraph style narrative of results. (2) few results not discussed	Paragraph style narrative of results is not included (directly shows tables and figures).	10
Discussion and Conclusion	In-depth discussion & elaboration in all sections of the paper. The conclusion is engaging and restates the thesis. Relates topic to 'real-world applications.	In-depth discussion & elaboration in most sections of the paper. The conclusion restates the thesis.	Omission of pertinent content or content runs on excessively. Quotations from others outweigh the writer's ideas. The conclusion does not adequately restate the thesis.	Cursory discussion in all the sections of the paper or brief discussion in only a few sections. An incomplete statement or confusing.	20
References	(1)A uniform standard format (e.g. CSE format). (2) More than three references.	(1)A uniform standard format (e.g. CSE format). (2) Three references.	Two references.	One or no references.	10
Tables and Figures	(1) Tables/figures numbered consecutively in separate series. (2) Title is complete enough to be understood without referring to the text. (3) Legend, headings, and units of measure are included. (4) Footnotes used as necessary to provide clarity concerning units of measure that do not fit in the heading, explanations of abbreviations and	Tables/figures numbered consecutively in separate series Title is complete. Legend, headings, and units of measure are included. Footnotes are used to provide clarity.	Tables/figures numbered, but not sequentially. The title is incomplete. Legend, headings, and units of measure are not fully included. Footnotes used but do not provide enough clarity	Tables/figures not numbered. No title. Legend, headings, and units of measure are not included. Footnotes are not used but are needed.	10

	symbols, the statistical significance of entries.				
Total					100