



AG 597 01W (CRN 87808): Advanced Nutritional Biochemistry

COURSE SYLLABUS: Fall 2022

Meeting Times: TR 9:30am – 10:45am

Meeting Location: EDS 103 OR online

INSTRUCTOR INFORMATION

Instructor: Dr. Brooke Clemmons

Office Location: AG/IT 233B

Office Hours: By appointment *Can be in-person or via Zoom (contact if you would like to meet via Zoom)

University Email Address: Brooke.Clemmons@tamuc.edu

Preferred Form of Communication: **email**

Communication Response Time: 48 business hours (I respect your weekends and holidays – please respect mine)

COURSE INFORMATION

Textbook(s) Required: Principles of Biochemistry, 5th Edition (ISBN 9780321830562)

Software Required: Microsoft Office Suite, Adobe Acrobat

Course Description

Three semester hours A course in biochemistry using nutrition as a model. Topics will include the energetics of metabolism, the structure and metabolism of proteins, carbohydrates, lipids and the integration of metabolic systems. Included also will be the chemistry of nitrogenous bases and how transcription and translation is accomplished on the cellular level.

Student Learning Outcomes

1. Describe the structure and function of amino acids, proteins, coenzymes, vitamins, carbohydrates, and lipids, and examine the role that structure applies to functions in the body with emphasis on livestock species
2. Explain metabolism and bioenergetics of nutrients and examine the role of these pathways in the context of animal health
3. Describe the process of biological information flow in the body and compare and contrast mechanisms of DNA and RNA synthesis and information transfer

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4. Investigate the importance of nutrients for normal bodily function and predict the ramifications of inadequate nutrient supply in livestock species
5. Examine the use of biochemical techniques to understand and explore nutritionally-relevant phenomena in livestock species
6. Justify utilization of biochemical processes and techniques to develop novel research project related to livestock species nutrition

COURSE REQUIREMENTS

Minimal Technical Skills Needed

Students will need to be able to access and use the course online platform for the University, D2L. They will also need to have access and be able to use Microsoft Word, PowerPoint, and other components of the Microsoft Office Suite.

Instructional Methods

This course will be offered as a face to face course or online course. Lectures will be recorded and uploaded to D2L. Live participation is NOT required for graduate students, though students are invited to participate live via Zoom or in-person. This course can be taken asynchronously and all assignments can be completed online. All exams will be offered on D2L and all assignments can be submitted via D2L.

Student Responsibilities or Tips for Success in the Course

In order to be successful in the course, students will need to ensure that they **actively** participate in the course, including any online activities or discussions; thus watching lectures and completion of assignments is paramount. A good rule of thumb is that students should spend approximately 2-3 hours outside of class on the course material for every hour of meeting time (i.e. for 1 hour of lecture you should study 2-3 hours outside of class). If you have any questions at all regarding the course structure, material, or anything else related to the course, feel free to post the question on the discussion forum on D2L or email the instructor. I can't help you if you don't ask for help!

GRADING

Final grades in this course will be based on the following scale:

A = 90%-100% (900 to 1000 pts)

B = 80%-89% (800 to 899 pts)

C = 70%-79% (700 to 799 pts)

D = 60%-69% (600 to 699 pts)

F= 59% or Below (< 600 pts)

Assignment	Point Value	Due Date
Exam 1	100	9/19/2022
Exam 2	100	10/17/2022

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Exam 3	100	11/21/2022
Exam 4	150	12/14/2022
Assignments	350	Throughout semester
Presentation on biochemical techniques	100	12/14/2022
Proposal paper	100	12/14/2022
Total	1000	

Assessments

All assessments and grading are presented in the above table. Assessments will include primarily exams, but will also include assignments throughout the semester. You will be graded on a combination of exams and assignments.

Exams: Exam dates and topics will be announced on D2L. All exams will not inherently be cumulative; however, due to the nature of the course, material builds upon previous material and material from previous exams may be included on subsequent exams. Students will NOT be allowed to take exam late unless **prior, university-approved excuses** have been cleared with the instructor. All graduate students will take exams on D2L and graduate students will have 1.5 hours to complete exams.

Assignments: Students will be given assignments throughout the semester. These assignments may be worksheets, quizzes, case studies, etc.

Presentation on biochemical techniques: Students will select a nutrient and research at least 2 biochemical techniques that can be used to measure the metabolism of that nutrient in the body. Students will record a 12-minute research talk on these techniques. Additional information will be provided on D2L.

Proposal paper: Students will propose a research project and write a research paper on the proposed research. It may be related to anything in biochemistry but MUST cover a topic discussion in class. Additional information will be provided on D2L.

TECHNOLOGY REQUIREMENTS

LMS

All course sections offered by Texas A&M University-Commerce have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

LMS Requirements:

<https://community.brightspace.com/s/article/Brightspace-Platform-Requirements>

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LMS Browser Support:

https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm

YouSeeU Virtual Classroom Requirements:

<https://support.youseeu.com/hc/en-us/articles/115007031107-Basic-System-Requirements>

ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@tamuc.edu.

Note: Personal computer and internet connection problems **do not excuse the requirement to complete all course work in a timely and satisfactory manner**. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc. Additionally, all students **MUST** have the Microsoft Office Suite. This can be procured from CITE.

COMMUNICATION AND SUPPORT

If you have any questions or are having difficulties with the course material, please contact your Instructor.

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here:

<https://community.brightspace.com/support/s/contactsupport>

Interaction with Instructor Statement

The BEST way to contact me is via email, and I will make every effort to return emails within 48 business hours. If I do not respond within this timeframe, please feel free to follow up with me.

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures/Policies

Your participation is required and expected for success in the course. In the event that you are unable to submit assignments on time, please let the instructor know **prior** to the assignment deadline and as soon as possible. Late homework/assignments will be accepted with a 10% penalty each day the assignment is late (including weekends) up to

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50%. Late work will not be accepted after 7 days after the assignment due date without prior approval. Exams must be taken during the designated timeframe unless the student has a university-approved excuse.

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

University Specific Procedures

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the [Student Guidebook](#).

<http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx>

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: <https://www.britannica.com/topic/netiquette>

TAMUC Attendance

For more information about the attendance policy please visit the [Attendance](#) webpage and [Procedure 13.99.99.R0.01](#).

<http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

Academic Integrity

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

[Undergraduate Academic Dishonesty 13.99.99.R0.03](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

[Graduate Student Academic Dishonesty 13.99.99.R0.10](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf>

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I take academic honesty incredibly seriously. Unless otherwise specified in the instructions or verbally in the lectures, you are not allowed to get any assistance from classmates or other people for work in the course. Unless otherwise stated, exams will be closed-note, closed-book exams. You will NOT be allowed to use ANY resource on the exam other than your own. Additional information about Academic Dishonesty can be found here:

<http://www.tamuc.edu/aboutus/policiesproceduresstandardsstatements/rulesprocedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

Examples and Definitions of Academic Dishonesty

Below are examples of academic dishonesty from 13.99.99.R0.03 Undergraduate Academic Dishonesty Rules and Regulations from TAMUC:

“Academic dishonesty includes the commission of any of the following acts. This listing is not, however, exclusive of any other acts that may reasonably be called academic dishonesty.

Clarification is provided for each definition by listing some prohibited behaviors.

ABUSE AND MISUSE OF ACCESS AND UNAUTHORIZED ACCESS: Students may not abuse or misuse computer access or gain unauthorized access to information in any academic exercise.

CHEATING: Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise. Unauthorized materials may include anything or anyone that gives a student assistance, and has not been specifically approved in advance by the instructor.

COMPLICITY: Intentionally or knowingly helping, or attempting to help, another to commit an act of academic dishonesty.

FABRICATION: Making up data or results, and recording or reporting them; submitting fabricated documents.

FALSIFICATION: Manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.

FORGERY: Making a fictitious document, or altering an existing document, with the intent to deceive or gain advantage.

MULTIPLE SUBMISSIONS: Submitting substantial portions of the same work (including oral reports) for credit more than once without authorization from the instructor of the class for which the student submits the work.

PLAGIARISM: The appropriation of another person's ideas, processes, results, or words without giving appropriate credit.

SPECIAL NOTE REGARDING GROUP PROJECTS: If someone in a group commits academic misconduct, the entire group could be held responsible for it as well. It is important to document clearly who contributes what parts to the joint project, to know what group members are doing, and how they are acquiring the material they provide.”

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Penalties for Academic Dishonesty

Discipline is up to the discretion of the faculty member. Below are common first offense disciplinary actions as outlined by TAMUC:

“The most common penalty imposed by a faculty member for a first violation is an “F” in the course.

Less severe penalties may be imposed if the circumstances warrant. Examples of lesser penalties include:

A grade reduction for the course

A zero on the assignment

A requirement to participate in extra requirements or training

Some combination of these”

Students with Disabilities--ADA Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services

Texas A&M University-Commerce

Gee Library- Room 162

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

Email: studentdisabilityservices@tamuc.edu

Website: [Office of Student Disability Resources and Services](http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/)

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

Nondiscrimination Notice

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry Statement

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed

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handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

Web url:

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

COURSE OUTLINE / CALENDAR

Date	Topic	Corresponding Chapters	Assignments
8/30/2022	Introduction to course/introduction to biochemistry	1	
9/1/2022	Water	2	Assignment 1: Syllabus quiz due
9/6/2022	Amino acids and primary structure of proteins	3	
9/8/2022	Protein structure and function	4	Assignment 2: Water, amino acids, and protein primary structure worksheet due
9/13/2022	Protein structure and function	4	
9/19/2022	Exam 1		
9/20/2022	Properties of enzymes	5	
9/22/2022	Properties of enzymes	5	
9/27/2022	Mechanisms of enzymes	6	Assignment 3: Protein structure and function worksheet due
9/29/2022	Mechanisms of enzymes	6	
10/4/2022	Coenzymes and vitamins	7	Assignment 4: Mechanisms of

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			enzymes worksheet due
10/6/2022	Carbohydrates	8	
10/11/2022	Lipids and membranes	9	
10/17/2022	Exam 2		Assignment 5: Nutrients worksheet due
10/18/2022	Introduction to metabolism	10	
10/20/2022	Cellular energy for metabolism	10	
10/25/2022	Glycolysis	11	Assignment 6: Metabolism worksheet due
10/27/2022	Gluconeogenesis	12	
11/1/2022	Glycogen metabolism	12	
11/3/2022	Citric acid cycle	13	Assignment 7: Glycolysis, gluconeogenesis, and glycogen metabolism worksheet due
11/8/2022	Electron transport chain and ATP synthesis	14	
11/21/2022	Exam 3	7 – 14	Assignment 8: Citric acid cycle and electron transport chain worksheet due
11/15/2022	Fatty acid and lipid synthesis	16	
11/17/2022	Fatty acid catabolism	16	
11/18/2022-11/27/2022 Thanksgiving break			
11/29/2022	Amino acid metabolism	17	Assignment 9: Fatty acid metabolism worksheet due
12/1/2022	Nucleotide metabolism	18	
12/6/2022	Nucleic acids	19	
12/8/2022	DNA replication, transcription and RNA processing	20, 21	Assignment 10: Amino acid and nucleotide worksheet due

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12/14/2022	Final exam due by midnight
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