

Instructor: Dr. Dustin Patterson

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Office Hours: Monday 2-3 pm, Tuesday 2-4 pm, and by appointment.

Lecture: Monday, Wednesday, and Friday 11:15am-12:10 pm in Soules College of Business Building (COB) room 103.

Text: Biochemistry: Concepts and Connections by D.R. Appling, S.J. Anthony-Cahill, and C.K. Matthews.

Equipment: Pencils, scientific calculator, and ruler.

Course Resources: Additional materials will be provided as either handouts or through the course Canvas site.

Course Content: Biochemistry II (CHEM 4334) is the second part in a two-part course series providing an introduction to fundamental principles and techniques in the chemistry of life, biochemistry. This course will continue on from Biochemistry I looking at central metabolic processes common to life, the chemical logic behind the pathways, and the regulatory mechanisms that control fluxes through pathways. In addition, an in depth look at signal transduction and coordination of biological process will be evaluated to understand how external and internal stimuli are communicated and lead to cellular responses.

Course Learning Objectives:

- Learn how biologic systems perform energy transduction via chemical processes carried out through metabolic pathways and principles for regulation of metabolic pathways
- Learn fundamentals in thermodynamic driving forces that power metabolism
- Learn methods of regulation in metabolic systems
- Examine the connectivity of metabolic pathways and their interplay for maintaining living systems
- Learn the molecular basis of cellular signaling and communication

Grade Distribution:

Grades will be determined by your performance on several regular exams, in addition to a final cumulative exam. A smaller percentage will come from assigned homeworks that will help test your understanding of topics discussed in lecture. Examinations will cover all materials from text, lectures, and any assigned materials. The breakdown of these components to your final grade is as follows:

Regular Exams (4)	72% (18% each)
Homeworks (4)	8% (2% each)
Final Exam	<u>20%</u>
Total	100%

Final grades will be determined on a standard grading scale of A 90-100%, B 80-89%, C 70-79%, etc. Incentive points may be added, based on initiative, class participation, and improvement in the course.

Academic Honesty

Cheating of any kind will not be tolerated. Please make yourself aware of the university policy for academic dishonesty in the *Student Guide to Conduct and Discipline at UT Tyler*. During examinations only writing utensils, a calculator (non-programmable), and ruler are the only things that will be allowed on your desk, in addition to scrap paper that will be provided. All questions concerning the exam should be directed to the instructor and any talking amongst students may be punishable by point deductions as the instructor sees fit.

NOTE THE POLICY FOR SMART DEVICES BELOW.

Cell phones and smart watches/electronic devices must be put away during exams. If they are observed out in a visually accessible place (i.e. between legs, on the floor, etc.), it will be assumed that they are being used to cheat and your exam will be taken, you will receive a zero score (0 points) for the exam, and you will be referred to the Office of Judicial Affairs.

Recording of lectures, office hours, or study sessions is not allowed without prior consent.

Attendance and make-up policy:

Course attendance is expected and is to the benefit of the student. Missing class will likely adversely affect a student's exam performance and will not allow any addition of potential incentive points to their final grade. The instructor should be notified of any expected absences according to the University of Texas at Tyler guidelines and may be excused for reasons allowed by the university (see statements below). Make-ups will be allowed only for reasons outlined in the University of Texas at Tyler bylaws (see below).

Census and Withdraw Dates:

The Census Date is January 23, 2023 and the Last Day to Withdraw is March 23, 2023.

Tentative Lecture Schedule

01/9/23 Lipids, Membranes (Ch. 10, p. 301-316)

01/11/23 Lipids, Membranes (Ch. 10, p. 301-316)

01/13/23 Lipids, Membranes (Ch. 10, p. 301-316)

01/16/23 Martin Luther King Jr. --Day No Class

01/18/23 Cellular Transport (Ch. 10, p. 317-331)

01/20/23 Chemical Logic of Metabolism (Ch.11, p. 335-358)
01/23/23 Carbohydrate Metabolism: Glycolysis (Ch. 12, p. 369-384)
01/25/23 Carbohydrate Metabolism: Glycolysis Mechanisms and Gluconeogenesis (Ch. 12, p. 369-393)
01/27/23 Metabolism: Glycolysis/Gluconeogenesis Regulation
01/30/23 Pentose Phosphate Pathway (Ch. 12, p. 393-410)
02/01/23 The Citric Acid Cycle (Ch. 13)
02/03/23 **Exam 1** (Ch. 9-12)
02/06/23 The Citric Acid Cycle (Ch. 13)
02/08/23 Electron Transport, Oxidative Phosphorylation (Ch. 14)
02/10/23 Electron Transport, Oxidative Phosphorylation (Ch. 14)
02/13/23 Putting the Metabolic Pathways Together (Ch 12-14)
02/15/23 Photosynthesis (Ch. 15)
02/17/23 Photosynthesis (Ch. 15)
02/20/23 Photosynthesis (Ch. 15)
02/22/23 Lipid Metabolism (Ch. 16)
02/24/23 Lipid Metabolism (Ch. 16)
02/27/23 Lipid Metabolism (Ch. 16)
03/01/23 Lipid Metabolism (Ch. 16)
03/03/23 **Exam 2** (Ch. 12-15)
03/06/23 Lipid Metabolism (Ch. 16)
03/08/23 Amino Acid and Nitrogen Metabolism (Ch. 18)
03/10/23 Amino Acid and Nitrogen Metabolism (Ch. 18)
03/13/23, 03/15/23 and 03/17/23 No Class—Spring Break
03/20/23 Amino Acid and Nitrogen Metabolism (Ch. 18)
03/22/23 Nucleotide Metabolism (Ch. 20)
03/24/23 Nucleotide Metabolism (Ch. 20)
03/27/23 Nucleotide Metabolism (Ch. 20)
03/29/23 Interorgan and Intracellular Coordination of Energy Metabolism (Ch. 17)
03/31/23 **Exam 3** (Ch. 16 and 18)
04/03/23 Interorgan and Intracellular Coordination of Energy Metabolism (Ch. 17)
04/05/23 Introduction to Biosignaling (Ch. 20)
04/07/23 Biosignaling: G-Protein Signaling (Ch. 20, p. 625-636)
04/10/23 Biosignaling: Receptor Tyrosine Kinase Signaling (Ch. 20, p. 636-648)
04/12/23 Biosignaling: Disease (Ch. 20 and supplementary)
04/14/23 Connecting Signaling to Metabolism
04/17/23 Putting Metabolism Together
04/19/23 **Exam 4** (Ch. 17, 20, and 20)
04/21/23 Wrap-Up

Final Exam: The final exam is comprehensive and will be held at the time and place specified by the UT Tyler Spring 2023 Final Exam Schedule. See www.uttyler.edu/registrar/ for the link to the official schedule.

I reserve the right to make modifications as needed to the course. This will be done in accordance with university bylaws.

Information for Classrooms and Laboratories: Students are expected to wear face masks covering their nose and mouth in public settings (including classrooms and laboratories). The UT Tyler community of Patriots views adoption of these practices consistent with its [Honor Code \(Links to an external site.\)](#) and a sign of good citizenship and respectful care of fellow classmates, faculty, and staff. Students who are feeling ill or experiencing symptoms such as sneezing, coughing, digestive issues (e.g. nausea, diarrhea), or a higher than normal temperature should stay at home and are encouraged to use the [UT Tyler COVID-19 Information and Procedures \(Links to an external site.\)](#) website to review protocols, check symptoms, and report possible exposure. Students needing additional accommodations may contact the Office of Student Accessibility and Resources at University Center 3150, or call (903) 566-7079 or email saroffice@uttyler.edu.

UT Tyler Honor Code

Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.

Students Rights and Responsibilities

To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link: <http://www.uttyler.edu/wellness/rightsresponsibilities.php>

Campus Carry

We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at <http://www.uttyler.edu/about/campus-carry/index.php>

UT Tyler a Tobacco-Free University

All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors. Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products. There are several cessation programs available to students looking to quit smoking, including counseling, quitlines, and group support. For more information on cessation programs please visit www.uttyler.edu/tobacco-free.

Grade Replacement/Forgiveness and Census Date Policies

Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or at <http://www.uttyler.edu/registrar>. Each semester's Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar. Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract. The Census Date is the deadline for many forms and enrollment actions of which students need to be aware. These include:

- Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date)
- Schedule adjustments (section changes, adding a new class, dropping without a "W" grade)
- Being reinstated or re-enrolled in classes after being dropped for non-payment
- Completing the process for tuition exemptions or waivers through Financial Aid

State-Mandated Course Drop Policy

Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date). Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

Disability/Accessibility Services

In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA) the University of Texas at Tyler offers accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or you have a history of modifications or accommodations in a previous educational environment, you are encouraged to visit <https://hood.accessiblelearning.com/UTTyler> and fill out the New Student application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with Cynthia Lowery, Assistant Director of Student Services/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at <http://www.uttyler.edu/disabilityservices>, the SAR office located in the University Center, # 3150 or call 903.566.7079.

The University of Texas at Tyler has a continuing commitment to providing reasonable accommodations for students with documented disabilities. Like so many things this Fall, the need for accommodations and the process for arranging them may be altered by the COVID-19 changes we are experiencing and the safety protocols currently in place. Students with disabilities who may need accommodation(s) in order to fully participate in this class are urged to contact the Student Accessibility and Resources Office (SAR) as soon as possible, to explore what arrangements need to be made to ensure access. During the Fall 2020 semester, SAR will be conducting all appointments via ZOOM. If you have a disability, you are encouraged to visit <https://hood.accessiblelearning.com/UTTyler> and fill out the New Student Application. For more information, please visit the SAR webpage at <http://www.uttyler.edu/disabilityservices> or call 903.566.7079.

Student Absence due to Religious Observance

Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

Student Absence for University-Sponsored Events and Activities

If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

Social Security and FERPA Statement

It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

Emergency Exits and Evacuation

Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.

Student Standards of Academic Conduct

Disciplinary proceedings may be initiated against any student who engages in scholastic dishonesty, including, but not limited to, cheating, plagiarism, collusion, the submission for credit of any work or

materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

i. "Cheating" includes, but is not limited to:

- copying from another student's test paper;
- using, during a test, materials not authorized by the person giving the test;
- failure to comply with instructions given by the person administering the test;
- possession during a test of materials which are not authorized by the person giving the test, such as class notes or specifically designed "crib notes". The presence of textbooks constitutes a violation if they have been specifically prohibited by the person administering the test;
- using, buying, stealing, transporting, or soliciting in whole or part the contents of an unadministered test, test key, homework solution, or computer program;
- collaborating with or seeking aid from another student during a test or other assignment without authority;
- discussing the contents of an examination with another student who will take the examination;
- divulging the contents of an examination, for the purpose of preserving questions for use by another, when the instructors has designated that the examination is not to be removed from the examination room or not to be returned or to be kept by the student;
- substituting for another person, or permitting another person to substitute for oneself to take a course, a test, or any course-related assignment;
- paying or offering money or other valuable thing to, or coercing another person to obtain an unadministered test, test key, homework solution, or computer program or information about an unadministered test, test key, home solution or computer program;
- falsifying research data, laboratory reports, and/or other academic work offered for credit;
- taking, keeping, misplacing, or damaging the property of The University of Texas at Tyler, or of another, if the student knows or reasonably should know that an unfair academic advantage would be gained by such conduct; and
- misrepresenting facts, including providing false grades or resumes, for the purpose of obtaining an academic or financial benefit or injuring another student academically or financially.

ii. "Plagiarism" includes, but is not limited to, the appropriation, buying, receiving as a gift, or obtaining by any means another's work and the submission of it as one's own academic work offered for credit.

iii. "Collusion" includes, but is not limited to, the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any section of the rules on scholastic dishonesty.

iv. All written work that is submitted will be subject to review by plagiarism software.

UT Tyler Resources for Students:

- UT Tyler Writing Center (903.565.5995), writingcenter@uttyler.edu
- UT Tyler Tutoring Center (903.565.5964), tutoring@uttyler.edu
- The Mathematics Learning Center, RBN 4021, this is the open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses.
- UT Tyler Counseling Center (903.566.7254)