

Course Number/Section	BIOL 3370.001
Course Title	Exercise Physiology
Term	Spring 2026
Days and Times	WF 1:00 - 2:15 PM
Location	GR 3.302
Professor	Z. Ruth Wu, PhD
email:	zhuoru.wu@utdallas.edu
Office	SLC 2.408
Office hours	WF 2:30 – 4 PM By appointment only, book a time here .
Optional workshop	Monday 4-5:30 PM, GR 3.606 Friday 3:30-5 PM, GR 3.302
<p>Perusall Teaching Assistants: Chloe Halsell, Chloe.Halsell@UTDallas.edu Timothy Archey timothy.archey@utdallas.edu</p> <p>Workshop & Tutorial Teaching Assistants: Aakash Patel, Aakash.Patel@UTDallas.edu Arrsh Ali, Arrsh.Ali@UTDallas.edu Keyur Patadia, Keyur.Patadia@UTDallas.edu Mihir Somisetty, Mihir.Somisetty@Utdallas.Edu (leader) Qamar Omari, Qamar.Omari@UTDallas.edu Zaen Yunus, Zaen.Yunus@UTDallas.edu</p> <p>One-on-one tutorial session: schedule with TAs via GroupMe (Scan QR code to the right →)</p>	



Checklist for the first week:

1. **All four exams will be administered at the UTD testing center.** Students need to reserve their time and seat for each exam ASAP by following the directions provided at <https://ets.utdallas.edu/testing-center/students>. **Students will earn 1 point if they register for ALL FOUR exams by midnight January 23.**
2. **The iClicker app is required to participate in the pop quizzes of the lectures** (\$15.99, the only expense associated with this class, if you have it for another class, then no extra cost). The grade constitutes the attendance credit and bonus credit for participating in the lectures (See details on page 3-5).
Please join the class in iClicker via the following links:
<https://join.iclicker.com/OUOT> or QR code:



For various iClicker instructions, please use the links below:

- [Checklist: Getting Started with the iClicker Student App](#)

- [How to Add your Instructor's Course in the iClicker Student App](#)
- [How to troubleshoot your connection in the iClicker Student App](#)
- [How to Participate in a Poll with Reef](#)

3. **Acquaint yourself with the resources offered in this course**, including:

- 1) Lecture recordings: link to the recordings is posted in "lecture materials" in eLearning, or you can find the recordings directly in class Teams under "files"
- 1) Lecture PPT: posted in eLearning under "lecture materials"
- 2) Lecture note guide: posted in eLearning under "lecture materials"
- 3) Practice questions: one of students' favorite resources, posted in eLearning under "lecture materials."
- 4) Free textbook chapters: tailor-made for the class is posted in "Perusal" in eLearning
- 5) Meet with Dr. Wu: link to a booking app to make an appointment for in-person or online meetings with Dr. Wu

Course Description:

This course will cover the following key aspects of exercise-associated physiology:

1. The study of the function of human organ systems during exercise endeavors.
2. Exploration of how an array of systems collaborates to fulfill the demands of exercise, including the cardiovascular, respiratory, neural, skeletal muscle, metabolic systems, and endocrine systems.
3. Considerations related to nutrition, the utilization of ergogenic aids, and the influence of genetic predisposition in the context of exercise physiology.
4. Examination of the practical implications and effects of exercise on the human body and mind.

Student Learning Objectives/Outcomes

1. Students will be able to describe the molecular/cellular mechanisms of the following three essential aspects of exercise:
 - i. Skeletal muscle movements and coordination (nervous and muscular systems)
 - ii. O₂ and CO₂ handling and regulation (cardiovascular and respiratory systems)
 - iii. Energy provision and balance (metabolic pathways and endocrine system)
2. Students will be able to describe the acute physiological challenges that exercise imposes on various organ systems and how these systems respond to the challenges.
3. Students will be able to explain how long-term adaptations or changes, such as hypertrophy of the muscle and heart, are induced by various chronic exercise training at molecular, cellular, and organ levels.
4. Students will be able to select various training programs to achieve the desired long-term adaptations that improve a particular physical performance according to the principle of exercise training.

Pre-requisite courses:

BIOL2311 & BIOL 2312 Introduction to Modern Biology 1 & 2

Textbook:

Exercise Physiology for BIOL 3370, 1st edition draft by Dr. Wu and a team of her previous students (Freely available on Perusall platform, eLearning has a link)

Recommended (optional) Textbook:

- Fundamental of Anatomy & Physiology**, 11th edition
Frederic H. Martini, Ph.D.; Judi L. Nath, Ph.D. & Edwin F. Bartholomew, M.S.
- Physiology of Sport and Exercise**. 6th edition. W.L. Kenney, J.H. Wilmore, and D.L. Costill, ISBN: 978-1-4504-7767-3 Website: <http://www.humankinetics.com>

Interaction with Instructor: The instructor will communicate with students through UTD email and the Announcements tool on eLearning. The instructor will reply to student emails within three working days under normal circumstances.

Online or in-person office hours will be by appointment only. Students may book a 20-minute time slot [here](#). If online meeting is selected, a meeting link will be created and sent to you and appear in your MS Team "Calendar."

Student Assessments /Grading Information

Exams x 4	100 points each	400
Quizzes x 14	Points vary by quiz	170
Lecture Attendance x24 (iClicker)	4 points per lecture (1 point for responding to at least 50% of the questions. 3 points for the correctness of your responses)	96
Quiz Bowl x4	Attendance at the Quiz Bowl is mandatory. Students will earn 1 points for attending. You may earn up to 3 additional points by answering additional questions.	4
Workshops & Tutorials x14	Up to 2 bonus points per week by participating in either a weekly in-person workshop or a one-on-one tutorial.	
Textbook feedback on Perusall x 14	You earn 2 bonus point for providing thoughtful, TA approved feedback for every textbook chapter posted on Perusall. Max 20 points.	
Total mandatory points		670

Points Earned	Letter Grade	Points Earned	Letter Grade
96-100%	A+	77-79%	C+
92-95%	A	74-76%	C
89-91%	A-	70-73%	C-
86-88%	B+	67-69%	D+
84-86%	B	64-66%	D
80-83%	B-	60-63%	D-
		<60%	F

Class Attendance – In person attendance at lectures is mandatory.

Course Schedule

The descriptions and timelines in this syllabus are subject to change at the discretion of the Professor.

Lecture	Day	Topic
Unit 1: Execution of Movement		
1	1/21	Course Info & Systems Biology
2	1/23	Electrical Activities of Cells
3	1/28	How Neurons Work
4	1/30	Skeletal Muscle Contraction & Toning
5	2/4	Somatic Nervous System- Planning & Coordination of Movement
6	2/6	Graded Force Generation: Summation & Motor Unit Recruitment
7	2/11	Principles of Exercise & Neural Adaptation to Resistance Training
8	2/13	Muscle Adaptation to Resistance Training & Quiz Bowl
M/T	2/16 ~ 2/17	Exam 1 at UTD testing center (8:30 AM - 8:30 PM)
	2/18	Exam-1 Analysis
Unit 2: O₂ and CO₂ Handling		
9	2/20	Cardiovascular System Overview
10	2/25	Cardiomyocytes & Regulation of Contractility
11	2/27	Pacemaker Cells & Regulation of Heart Rate
12	3/4	Regulation of Cardiac Output & Chronic Cardiac Adaptation to Exercise
	3/6	Quiz Bowl
M/T	3/9 ~ 3/10	Exam 2 at UTD testing center (8:30 AM - 8:30 PM)
13	3/11	Blood Distribution & Smooth Muscles
14	3/13	Acute Vascular Adaptation to Exercise
3/16~ 3/22		Spring Break
15	3/25	Respiratory System: Pulmonary Ventilation & Acute Adaptation to Exercise
16	3/27	Respiratory System: External and Internal Respiration
17	4/1	Blood & Transportation of O ₂ and CO ₂
	4/3	Quiz Bowl
M/T	4/6 ~ 4/7	Exam 3 at UTD testing center (8:30 AM - 8:30 PM)
Unit 3: ATP Supply		
18	4/8	Muscle Metabolism-1
19	4/10	Muscle Metabolism-2
20	4/15	Fuels Choice & Muscle Types
21	4/17	Muscle Fatigue & Chronic Metabolic Adaptation to Exercise Training
22	4/22	Hormonal Regulation of Carbohydrate and Fat Metabolism
23	4/24	Hormonal Regulation of Basal Metabolic Rate
24	4/29	Regulation of Food Intake and Energy Expenditure
	5/1	Quiz Bowl
M/T	5/4 ~ 5/5	Exam 4 at UTD testing center (8:30 AM - 8:30 PM)

****Last day to withdraw from class is April 8, 2026**

Exams should be completed on the dates posted in course schedule. **The following policies will be reinforced with no exception.**

1. Those who **failed to register** for the exam will **receive zero points; no makeup exam will be allowed.**
2. Those who registered but **fail to show up to take the test** without communicating a legit reason will **receive zero points; no makeup exam will be allowed.**

Legitimate excuses include a physician's note stating your condition does not permit you to take the exam. **Notes from doctors of virtual clinics will not be accepted** due to their inability to validate your conditions. **Upon prior discussion with Dr. Wu,** a make-up may be considered.

3. Those who registered and showed up for the exam but could not take it due to **violating the testing center rules will lose 20 points from their makeup test,** which will be administered at the testing center during the following week.

Textbook Chapters on Perusall – (Extra Credit) Textbook chapters will be provided to students free of charge through Perusall. To improve the textbook for future readers, students are encouraged to provide thoughtful feedback on the chapters. TA approved feedback earns 5 points per 3 textbook chapter, up to a total of 15 points total.

The deadline to earn bonus points for feedback is the Friday following each exam. For example, feedback for any textbook chapter in Unit 1 must be submitted before 9/26 at 11:59PM.

Practice problems are also available on Perusall for every lecture topic. These questions are designed to test your ability to apply knowledge from the lecture and the textbook without punishing learning mistakes. Details explaining why each answer option is correct/incorrect are given after answering. Perusall practice problems are not graded.

Textbook Chapter	Feedback Due Date/Time	
1-8	2/22	11:59 PM
16-19	3/22	11:59 PM
20-24	4/12	11:59 PM
9-15	5/10	11:59 PM

Workshop & Tutorial sessions (*optional but extremely recommended – extra credit*): Previous students have rated workshops and tutorial sessions as the most valuable resources. These sessions provide excellent chances to review challenging concepts, practice problem-solving, and engage with fellow classmates. **Regular participation is highly recommended.**

The weekly workshop times:

Monday 4-5:30 PM, GR 3.606

Friday 3:30-5 PM, GR 3.302

Tutorial session times: Message the TAs via GroupMe (Scan QR code below)



Quiz Bowl: Attendance is mandatory. The quiz bowl is a gameshow-style roulette to earn bonus points toward your final grade that occurs at the end of the last class of each unit. Students will receive bonus points based off their performance.

eLearning Quizzes –can be found in the "Quizzes and Exams" folder in the Course Content Area. The opening and closing date/times are specified in the table below. **It is the responsibility of the student to keep track of the quiz schedule. Any missed quizzes will result in a grade of 0 (zero), and no make-up quizzes will be allowed.**

eLearning Weekly Quiz Schedule

Quiz #	Content	Post Date/Time		Expiration Date/Time	
1	Lecture 1-2	1/23	7:00 PM	1/25	11:59 PM
2	Lecture 3-4	1/30	7:00 PM	2/1	11:59 PM
3	Lecture 5-6	2/6	7:00 PM	2/8	11:59 PM
4	Lecture 7-8	2/13	7:00 PM	2/15	11:59 PM
5	Lecture 9	2/20	7:00 PM	2/22	11:59 PM
6	Lecture 10-11	2/27	7:00 PM	3/1	11:59 PM
7	Lecture 12	3/4	7:00 PM	3/8	11:59 PM
8	Lecture 13-14	3/13	7:00 PM	3/15	11:59 PM
9	Lecture 15-16	3/27	7:00 PM	3/29	11:59 PM
10	Lecture 17	4/1	7:00 PM	4/5	11:59 PM
11	Lecture 18-19	4/10	7:00 PM	4/12	11:59 PM
12	Lecture 20-21	4/17	7:00 PM	4/19	11:59 PM
13	Lecture 22-23	4/24	7:00 PM	4/26	11:59 PM
14	Lecture 24	4/29	7:00 PM	5/3	11:59 PM

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

“As a Comet, I pledge honesty, integrity, and service in all that I do.”

UT Dallas Syllabus Policies and Procedures

Please use the following permanent address when referring to this page: <http://go.utdallas.edu/syllabus-policies>

Sharing Confidential Information

Students considering sharing personal information in email, in person, or within assignments or exams should be aware that faculty members and teaching/research assistants are required by UT Dallas policy to report information about sexual misconduct to the UT Dallas Title IX Coordinator. Per university policy, faculty have been informed that they must identify the student to the UT Dallas Title IX Coordinator. Students who wish to have confidential discussions of incidents related to sexual harassment or sexual misconduct should contact the Student Counseling Center (972-883-2527 or after hours 972-UTD-TALK or 972-883-8255), the Women's Center (972-883-8255), a health care provider in the Student Health Center (972-883- 2747), the clergyperson (or other legally recognized religious advisor) of their choice, or an off- campus resource (i.e., rape crisis center, doctor, psychologist). Students who are sexually assaulted, harassed, or victims of sexual misconduct, domestic violence, or stalking, are encouraged to directly report these incidents to the UT Dallas Police Department at 972-883- 2222 or to the Title IX Coordinator at 972-883-2218. Additional information and resources may be found at <http://www.utdallas.edu/oiec/title-ix/resources>.

Campus Carry

The University's concealed handgun policy is posted on the campus carry website: <https://www.utdallas.edu/campuscarry/>

Technical Support

If you experience any issues with your UT Dallas account, contact the UT Dallas Office of Information Technology Help Desk: assist@utdallas.edu or call 972-883- 2911.

UT Dallas provides eLearning technical support 24 hours a day/7 day a week. The services include a toll-free telephone number for immediate assistance (1-866-588-3192), email request service, and online chat service. Please use this link to access the UTD eLearning Helpdesk: <http://www.utdallas.edu/elearning/eLearningHelpdesk.html>.

Field Trip Policies, Off-Campus Instruction, and Course Activities

Off-campus, out-of-state, foreign instruction/travel, and course-related field trip activities are subject to state law and University policies and procedures regarding

travel and risk-related activities.

Detailed information regarding this policy, in accordance to *Texas Education Code*, Section 51.950, can be accessed at the UT Dallas Policy

Navigator, <http://policy.utdallas.edu/utdbp3023>, and at <http://www.utdallas.edu/administration/insurance/travel>. Additional information is available from the office of the school dean.

Student Conduct and Discipline

The University of Texas System (Regents' Rule 50101) and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UT Dallas online catalogs (<http://catalog.utdallas.edu>).

The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the Student Code of Conduct, UTDSP5003 (<http://policy.utdallas.edu/utdsp5003>). Copies of these rules and regulations are available to students in the Office of Community Standards and Conduct, where staff members are available to assist students in interpreting the rules and regulations (SSB 4.400, 972-883-6391) and online at <https://www.utdallas.edu/conduct/>.

A student at the University neither loses their rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating its standards of conduct, whether such behavior takes place on or off-campus, or whether civil or criminal penalties are also imposed for such conduct.

Academic Integrity

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrates a high standard of individual honor in his or her scholastic work.

Academic Dishonesty: Academic dishonesty can occur in relation to any type of work submitted for academic credit or as a requirement for a class. It can include individual work or a group project. Academic dishonesty includes plagiarism, cheating, fabrication, and

collaboration/collusion. In order to avoid academic dishonesty, it is essential for students to fully understand the expectations of their professors. This is best accomplished through asking clarifying questions if an individual does not completely understand the requirements of an assignment.

Additional information related to academic dishonesty and tips on how to avoid dishonesty may be found here: <https://www.utdallas.edu/conduct/dishonesty/>.

Copyright Notice

It is the policy of the University of Texas at Dallas to adhere to the requirements of the United States Copyright Law of 1976, as amended, (*Title 17, United States Code*), including ensuring that the restrictions that apply to the reproduction of software are adhered to and that the bounds of copying permissible under the fair use doctrine are not exceeded. Copying, displaying, reproducing, or distributing copyrighted material may infringe upon the copyright owner's rights. Unauthorized distribution of copyrighted material, including unauthorized peer-to-peer file sharing, may subject students to appropriate disciplinary action as well as civil and criminal penalties. Usage of such material is only appropriate when that usage constitutes "fair use" under the Copyright Act. For more information about the fair use exemption, see <http://copyright.lib.utexas.edu/copypol2.html>. As a UT Dallas student, you are required to follow UT Dallas' copyright policy (UTDPP1043 at <http://policy.utdallas.edu/utdpp1043>) and the UT System's policy, UTS107 at <http://www.utsystem.edu/board-of-regents/policy-library/policies/uts107-use-copyrighted-materials>.

Email Use

The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. All official student email correspondence will be sent only to a student's UT Dallas email address and UT Dallas will only consider email requests originating from an official UT Dallas student email account. This allows the University to maintain a high degree of confidence in the identity of each individual's corresponding via email and the security of the transmitted information. The University of Texas at Dallas furnishes each student with a free email account that is to be used in all communication with university personnel. The Office of Information Technology provides a method for students to have their UT Dallas mail forwarded to other email accounts. To activate a student UT Dallas computer account and forward email to another account, go to <http://netid.utdallas.edu>.

Withdrawal from Class

The administration at UT Dallas has established deadlines for withdrawal from any course. These dates and times are published in the Comet Calendar (<http://www.utdallas.edu/calendar>) and in the Academic Calendar (<http://www.utdallas.edu/academiccalendar>). It is the student's responsibility to handle withdrawal requirements from any class. In other words, a professor or other instructor cannot drop or withdraw any student unless there is an administrative drop such as the following:

- Have not met the pre-requisites for a specific course
- Have not satisfied the academic probationary requirements resulting in suspension
- Office of Community Standards and Conduct request
- Have not made appropriate tuition and fee payments
- Enrollment is in violation of academic policy
- Was not admitted for the term in which they registered

It is the student's responsibility to complete and submit the appropriate forms to the Registrar's Office and ensure that he or she will not receive a final grade of "F" in a course if he or she chooses not to attend the class after being enrolled.

Student Grievance Procedures

Procedures for student grievances are found in university policy UTDSP5005 (<http://policy.utdallas.edu/utdsp5005>). In attempting to resolve any student grievance regarding disputes over grades, application of degree plan, graduation/degree program requirements, and thesis/and dissertation committee, adviser actions and/or decisions, evaluations, and/or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originated.

Incomplete Grade Policy

As per university policy, incomplete grades may be given, at the discretion of the instructor of record for a course, when a student has completed at least 70% of the required course material but cannot complete all requirements by the end of the semester. An incomplete course grade (grade of 'I') must be completed within the time period specified by the instructor, not to exceed eight (8) weeks from the first day of the subsequent long semester. Upon completion of the required work, the symbol 'I' may be converted into a letter grade (A through F). If the grade of Incomplete is not removed by the end of the specified period, it will automatically be changed to F.

Accessibility Services

It is the policy and practice of The University of Texas at Dallas to make reasonable

accommodations for students with properly documented disabilities. However, written notification from the Office of Student AccessAbility (OSA) is required. If you are eligible to receive an accommodation and would like to request it for this course, please discuss it with your Professor and allow one week advance notice. Students who have questions about receiving accommodations, or those who have, or think they may have, a disability (mobility, sensory, health, psychological, learning, etc.) are invited to contact OSA for a confidential discussion. OSA is located in the Student Services Building, SSB 3.200. They can be reached by phone at 972-883-2098, or by email at studentaccess@utdallas.edu.

Religious Holy Days

The University of Texas at Dallas will excuse a student from class or other required activities, including examinations and travel time for the observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20 of the *Texas Tax Code*.

Students are encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment.

Excused students will be allowed to take missed exams or complete assignments within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment.

If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the President of UT Dallas or from the President's designee. The chief executive officer or designee must take into account the legislative intent of *Texas Education Code* 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.

Resources to Help You Succeed

The Office of Student Success operates the Student Success Center. (SSC, <http://www.utdallas.edu/studentssuccess>), which offers assistance to students in the areas of writing, mathematics, communication, multiple science fields, reading, study skills, and other academic disciplines. These services are available through individual and small group

appointments, workshops, short courses, and a variety of online and instructional technologies. All students enrolled at UT Dallas are eligible for these services.

The **Writing Center** offers a collaborative learning environment for one-to-one and small group assistance with general and advanced writing assignments and overall writing skills. Scheduling an appointment is strongly recommended, but walk-in appointments are possible if a tutor is available.

The **Peer Tutoring** program offers free tutoring assistance in multiple locations for many of the historically challenging undergraduate subjects at UT Dallas. Tutoring sessions, offered every weekday on a drop-in basis, are one-on-one or in a small group format. The sessions are designed to meet students' individual questions and need related to course/subject concepts. All peer tutors are current UT Dallas students who made an A- or better in the course and have a strong faculty/staff recommendation. Students should check the Student Success Center website each semester for subject offerings and session times.

The **Peer-Led Team Learning (PLTL)** program provides an active, engaging learning experience for students who meet in small groups once a week with a Peer Leader who helps guide them through a potentially difficult gateway course. Students that attend sessions regularly typically earn a half to a whole letter grade higher than students that do not participate in the PLTL program.

Supplemental Instruction (SI) provides free, peer-facilitated weekly study sessions for students taking historically difficult courses. SI sessions encourage active, collaborative learning based on critical thinking and transferable study skills. SI leaders attend lectures, take notes, and read assigned material just like the enrolled students. Students should check the SSC website for subject and session times.

The **Communication Lab (CommLab)** offers one-on-one and group consultations where you will gain practical feedback for improving oral and group presentations.

Success Coaches are available for individual student appointments to discuss study skills, time management, note-taking, test-taking and preparation, and other success strategies. The Student Success Center's main office is located in the McDermott Library Building and can be contacted by calling 972-883-6707 or by sending an email to ssc@utdallas.edu.

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