GRADUATE COUNCIL: NEW COURSE PROPOSAL

Originating Unit: Biology

Type of action: ☑ New course ☐ Full online course**

Semester and year course will take effect: Fall 2023

New course title: Physiology

Appropriate computer abbreviation (30 spaces or less): Physiology

Course instructional methodology: Lecture

course component types: ugradcouncil.tcu.edu/forms/Course Component Types.pdf

New course number: Biol 60803

Prerequisites for new course: *include an attachment if additional space is needed*

None

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Description of new course (catalog copy): *include an attachment if additional space is needed*

Three hours of lecture per week. Basic functions of the major mammalian systems will be studied in terms of physical and chemical principles and system interactions.

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Fully Online Courses**

All online courses, and /or distance learning offerings must meet State Compliance regulations as defined by specific state legislation. TCU Distance Learning is any for-credit instruction provided to a TCU student outside the State of Texas. This includes internships, clinical, video conferencing, online, or any other delivery format that crosses state lines. Contact the Koehler Center for Teaching Excellence for guidelines. Include a letter of support from the Koehler Center with this proposal.

Supporting evidence or justification: (For a new course, attach proposed syllabus, including course objectives, course outline, and representative bibliography.)

Describe the intended outcomes of the course and how they will be assessed: *include an attachment if additional space is needed*

See attached

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Additional resources required:

Faculty: None

Space: None

Equipment: None

Library: None

Financial Aid: None

Other: None

Change in teaching load:

Does this change affect any other units of the University? ☐ Yes ☐ No

If yes, submit supporting statement signed by chair of affected unit.

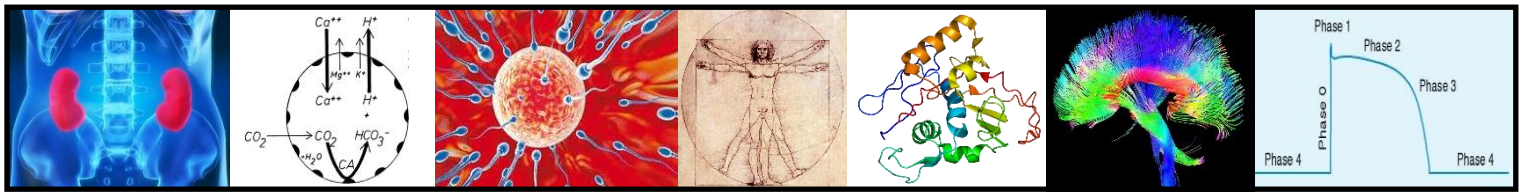
If cross-listed, provide evidence of approval by all curriculum committees appropriate to both the originating and the cross-listed units.

Chair of Originating Unit:

Name: Marlo Jeffries

Unit: Biology

Signature: MJeffries



Physiology

BIOL 60803, Fall 2023

Dr. Marlo Jeffries, WIN 506
m.jeffries@tcu.edu, 817-257-6171 (office)

Meeting Times & Office Hours

Class Meetings. TR 9:30-10:50, SWR LH3
Office Hours. W 4:00-5:30PM and R 11:00-12:00PM, WIN 506
*Individual appointments are available for students needing to discuss private matters
(send an email along with a screenshot of your course schedule and 3 potential meeting times)

Peer Tutor Information

Peer tutors/teaching assistants will be available during class to facilitate group activities and will also be available for tutoring.

General Course Information

Catalog Course Description. Three hours of lecture per week. Basic functions of the major mammalian systems will be studied in terms of physical and chemical principles and system interactions.

Detailed Course Description. The course will focus on the structure and function of the major mammalian physiological systems. The course will focus on the physiological function of major systems including the nervous, sensory, skeletomuscular, cardiovascular, pulmonary, renal, gastrointestinal and reproductive systems. For each system discussed, a brief overview of anatomical structure will be provided. The biological, chemical and physical principles that underlie the physiological processes will be weaved throughout the course material. Though the study of physiology often focuses only on bodily systems under normal conditions, pathophysiology and physiological extremes may be discussed as time permits. In addition, students will gain experience exploring the physiology literature independently to learn about processes not explicitly discussed as part of the course.

Course Goals. The course will provide students with a broad understanding of physiology. Upon course completion, students will have gained an understanding of: 1) the basic molecular, chemical, and physical principles that govern physiological processes, 2) the detailed physiological mechanism that allow for the maintain homeostasis and 3) the structure and function of major body systems. In addition, students will gain experience in searching for, reading, and interpreting the primary literature in physiology.

Course delivery. This course will be taught using an active learning approach in which students obtain course content outside of scheduled class hours through reading pre-lecture notes and watching recorded lecture videos. During scheduled class times, students will work in groups to complete activities that allow them to practice the problem-solving skills necessary to synthesize concepts discussed in the lecture videos.

Course Resources.
Text Book. No text books are required for this course. All material will be delivered in pre-lecture notes, lecture recordings, in-class activities, and class meetings.

D2L. Lecture recordings and grades will be posted on D2L.

Course Grading System

Grades will be determined by the performance on lecture quizzes, regular exams, and a comprehensive final.

Quizzes. There will be 12 quizzes, each worth 5 points. These quizzes are intended to test a student's knowledge of basic concepts discussed in the lecture recordings. Quizzes may consist of multiple choice, matching, fix the false or fill-in-the-blank questions. The two lowest quiz scores will be dropped.

Regular Exams and Final Exam. There will be 4 regular exams, each worth 100 points, and a comprehensive final exam worth 120 points. Exams are intended to test a student's ability to synthesize information presented in lecture recordings, in-class activities, and course meetings. Exams may consist of short answer/essay, multiple choice, matching, fix the false or fill-in-the-blank questions.

Report. Students will write a 4-6 page report (double spaced) detailing a physiological process that is relevant to their research, but not discussed in depth as part of the course. The report must address the following: 1) the physiological purpose of the process selected, 2) the molecular mechanisms underlying the process including the molecular initiating event(s) that trigger the process and a well labeled image showing key mechanistic steps, and 3) two examples of how the process can be dysregulated by disease, chemical exposure, radiation, or some other relevant disturbance. The report may address physiological processes that occur in non-mammalian organisms; however, students electing to discuss such a process must indicate if and how the process differs between mammals and non-mammals. Students must have their topic approved by Dr. J prior to Friday, Sept. 9th. A first draft is due by Friday, Oct. 7th and a final draft is due by Friday, Nov. 18th. 15% of the final grade will be based upon the student's score on the first draft. Students that do not submit a first draft will incur a 15-point deduction and forfeit the opportunity to receive feedback prior to the submission of their final report.

Point Distribution and Grading Scale. Point distributions and the grading scale are outlined below.

Point distribution	
Exams I	100 points
Exam II	100 points
Exam III	100 points
Exam IV	100 points
Final Exam	120 points
Report	100 points
Quizzes (12 x 5 pts each)	60 points
Total	680 points
Total after dropped scores*	***670 points***

****the 2 lowest quiz scores will be dropped*

Grading Scale (out of 670 points)	
A	≥ 603 points
B	536 – 602.9 points
C	469 – 535,9 points
F	≤ 468.9 points

Course Policies

As stated in the *TCU Official Student Handbook*, "Each student is expected to be fully acquainted with all published policies, rules, and regulations of the University and will be held responsible for compliance with them." You are expected to maintain high standards of personal and scholarly conduct. You are also expected to review all syllabus disclosures, which appear toward the end of this document.

Attendance and participation*.* Absence from class and tardiness will negatively impact your grade as it will prevent you from participating in group activities intended to deepen your understanding of course material and practice your problem-solving skills in preparation for exams.

Accommodations*.* Texas Christian University affords students with disabilities reasonable accommodations in accordance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. To be eligible for disability-related academic accommodations, students are required to register with the TCU Office of Student Access and Accommodation and have their requested accommodations evaluated. Students are required to provide instructors an official TCU notification of accommodation approved through Student Access and Accommodation. More information on how to apply for accommodations can be found at https://www.tcu.edu/access-accommodation/ or by calling Student Access and Accommodation at (817) 257-6567. Accommodations are not retroactive and require advance notice to implement. Students granted extended time for quizzes and exams must provide notice to the course instructor at ≥ 5 days in advance of the assessment so that suitable arrangements can be made.

Academic misconduct. Cheating, plagiarism, collusion, etc. are not acceptable. Students cheating may be subject to a variety of sanctions at the discretion of the course instructor, including disenrollment from the course and a failing course grade. Unauthorized recording and/or distribution of lectures and class meetings violates course policy and may represent academic dishonesty. Student engaged in academic conduct will be reported to the appropriate administrators. Be aware that engaging in academic misconduct may prevent you from being accepted to professional schools. **Simply put, cheating is NOT worth it. A subpar grade is far less detrimental to your future than a record demonstrating a lack of integrity**. Information regarding academic misconduct appears in the "Syllabus Disclosures" portion of this syllabus.

Assistance outside of class. There will be up to 10 hours* available each week for students to seek help with course material. Students are strongly encouraged to attend office hours and/or tutoring to seek help as soon as questions related to course content arise as it is best to seek clarification of concepts soon after lectures are posted, rather than waiting until just before an exam. **Questions regarding course material will only receive responses if they are asked *no later than 10 am on the Monday prior to Tuesday exams and no later than 10 am on the Wednesday prior to Thursday exams***. As such, office hours and tutoring sessions scheduled after 10 am on the Wednesday prior to Thursday exams or on the day of Thursday exams will not be held. Similarly, office hours and tutoring sessions scheduled after 10 am on the Monday prior to Tuesday exams will not be held.

Electronics. All electronic devices (e.g., laptops, phones, etc.) are to be turned off during course meetings, quizzes, in-class activities and exams. Students that utilize such devices during course meetings may be asked to leave class, which may prevent them from participating in in-class activities (thus, a score of 0 would be issued). Use of phones, tablets, additional computers or smart watches during quizzes or exams will be considered academic dishonesty and a grade of 0 for the quiz or exam in question will be issued, along with other sanctions per instructor discretion.

Email Etiquette and Expectations. When you send an email to the course instructor, please remember to be professional and respectful. All emails should include: 1) a descriptive subject line, 2) a proper greeting that addresses the email recipient by their proper title, 3) brief, yet descriptive text describing the purpose of your email, 4) an appropriate closer (e.g., Sincerely, Best regards, etc.), and 5) your name. Emails should be virtually free of grammatical errors, typos, casual slang, and text abbreviations. Students sending professional and respectful emails to the course instructor can expect a response within 48 hours for emails sent Sunday-Thursday and within 72 hours for emails sent Friday-Saturday.

Late and make-up work. Make-ups are only guaranteed for University-approved absences. Unapproved absences will be evaluated on a case-by-case basis and the opportunity for make-up work may be granted, at the discretion of the instructor, under some circumstances (e.g., serious illness, serious emergencies, etc.).

Tips for a successful semester

We will utilize an inverted learning approach throughout the semester in which you will gain course content on your own via pre-lecture readings and recorded lectures and then utilize class time to synthesize material and practice your problem-solving skills through group activities. This approach requires that you are an active participant in your own learning. Functionally, what this means is that you are responsible for keeping up with the course material, which will require that you set aside a sufficient amount of time outside of class each week to complete all assigned tasks by their completion date.

Learning outside of the classroom – tips & tricks.

- Create or find an effective learning environment. Craft a physical space in your dorm, apartment or room that is dedicated solely to learning. It may be tempting to listen to lectures and study while lounging in bed – however, this confuses your brain and can adversely impact your ability to sleep and learn. Establish boundaries with your living companions (e.g., quiet hours, computer sharing "rules", etc.). Eliminate distractions – keep social media and your email closed, your phone on silent, and the TV off when you are listening to lectures and studying.
- Ensure that you have adequate technological resources. Major aspects of this course include an online component; thus, adequate technological resources are needed to ensure success. Students are responsible for ensuring that they have such resources.

- Set and stick to a realistic weekly schedule and stick to it. Build in specific times to listen to lectures, work on your report, review course materials, etc.
- Take care of yourself! Be sure that you are getting adequate amounts of sleep (the CDC recommends 7+ hours each night!), eating well, and setting time aside to do the things that make you feel grounded and happy. Volunteer, read for fun, call your mom, go on a hike - whatever brings you joy and helps you rejuvenate, make time for it.
- Stay motivated! Remember why you are here and focus on the goals that you have set out to achieve. Celebrate your successes rather than dwelling on your shortcomings. If you start to feel a lack of motivation, attend office hours or tutoring for a pep talk and to discuss strategies for keeping your head in the game.

Course Schedule (DATES WILL BE ADJUSTED TO CONFORM TO FALL 2023)

Week	Topic	Pre-recorded or note-based lectures to be completed by the end of the week	In-class
1 (8/22)	Membrane Potentials	Pre-lecture 1: Review of Cell Signaling L1: Resting Membrane Potentials (47 min) L2: Graded Potentials (29 min) L3A: Action Potentials (24 min) L3B: Action Potentials (33 min)	None
2 (8/29)	Neurological Function & Sensory System Physiology	L4: Neurotransmitters (43 min) Pre-lecture 5: Nervous System Basics L5: Sensory System Basics (52 min)	T: Quiz 1, Activity 1 R: Homeostasis Lecture and Activity
3 (9/5)	Sensory Physiology	L6&7: Vision (52 min) L8: Olfaction (35 min) L9&10: Touch and Taste (47 min)	T: Quiz 2, Activity 2 R: Activity 2
By Friday, Sept. 9th: Report topic must be submitted to Dr. J for approval			
4 (9/12)	Sensory Physiology Muscle Physiology * *(*covered on Exam 2)*	L11: Hearing (27 min) Pre-lecture 12: Muscle Basics* L12: Skeletal Muscle Signal Transduction* (36 min)	T: Activity 3 **R: Exam I**
5 (9/19)	Muscle Physiology	L13: Skeletal Muscle Tension Generation (52 min) L14: Muscle Types, Metabolism, and Recruitment (32 min)	T: Quiz 3, Activity 4 R: Activity 4
6 (9/26)	Muscle Physiology	L15: Smooth Muscle (40-67 min) L16: Cardiac Muscle (47 min)	T: Quiz 4, Activity 5 R: Activity 5
7 (10/3)	Cardiovascular Physiology (Part 1)	Pre-lecture 17: Cardiovascular Basics L17: Cardiac Cycle and Output (59 min)	T: Quiz 5, Activity 6 R: NO CLASS
By Friday, Oct. 7th: First-draft Report due			
8 (10/10)	Cardiovascular Physiology (Part 2) *(*covered on Exam 3)*	L18 Part A: Tubes & Pressure (30 min)* L18 Part B: Tubes & Pressure (54 min)*	T: Activity 7 R: **Exam 2**
9 (10/17)	Pulmonary Physiology	Pre-lecture L21: Pulmonary Anatomy L21: Ventilation #1 (53 min) L22: Ventilation #2 (29 min) L23: Regulation of Respiration (42 min)	T: Quiz 6, Activity 8 R: Activity 8
10 (10/24)	Pulmonary Physiology Endocrinology	L24: Gas Exchange #1 (48 min) L25: Gas Exchange #2 (48 min) L26: Endocrine System Basics	T: Quiz 7, Activity 9 R: Activity 9
11 (10/31)	Renal Physiology* *(*covered on Exam 4)*	Pre-lecture 27: Renal Anatomy* L27: Filtration* (30-40 min)	T: Activity 10 R: **Exam 3**
12 (11/7)	Renal Physiology	L28: Water & Ion Balance #1 (60 min) L29: Water & Ion Balance #2 (30 min)	T: Quiz 8, Activity 11 R: Activity 11
13 (11/14)	Reproductive Physiology	L30: Sexual Differentiation (37 min)	T: Quiz 9, Activity 12 R: Activity 12

Week	Topic	Pre-recorded or note-based lectures to be completed by the end of the week	In-class
		L31: Female Reproductive Phys (40-67 min) L32: Male Reproductive Phys (19 min)	
Friday, Nov. 18th: Final Report due			
14 (11/21)	Thanksgiving Break	No new recorded lectures	T: No class (Break) R: No class (Break)
15 (11/28)	Digestive Physiology* *(*covered on Final exam)*	Pre-lecture 33: Digestive System Anatomy* L33: Acid Secretion* (40-58 min) L34: Absorption* (40-48 min)	T: Activity 13 R: **Exam 4** (all)
16 (12/5)	Course Wrap-up	No new material	T: Quiz 10, Activity 14 R: NO CLASS
17 (12/12)	Finals Week		T: **Final Exam from 8-10:30**