

Department of Physiology

Introduction to Physiology PSL250 - Spring 2023 Syllabus

Credit Hours: 4

Course Modality: Face-to-face

Course meeting days and times: Tuesday and Thursday from 12:40pm - 2:30pm

Course location: [E100 Veterinary Medical Center](#)

Instructor: Dr. Theodore Towse, Ph.D., he/him/his

Office: [4172 BPS](#)

Office Hours: Wednesdays 2:00pm - 4:00pm, or by appointment (in-person).

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Office Phone: 884-5154

When contacting me directly, email is my preferred means of communication. When emailing **anyone** on the teaching team please put “**PSL250**” in the subject line and use your MSU assigned email account so we can prioritize your email and avoid the university’s SPAM filters. Lastly, although we will try to respond to your email as quickly as possible, allow at least 1 business day for us to respond. Note: if you have a question about the course that is not of a personal nature, please first post it to the discussion board before emailing any of the teaching team as one of your fellow students may know the answer and everyone on the discussion board can benefit from the knowledge. IN fact if you email me a question the first thing I will ask you is “did you post your question to the discussion board?”

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Course Information

Physiology is the study of the function, regulation and integration of organs and organ systems of higher animals emphasizing human physiology. In this course we will explore core concepts in physiology and apply these concepts to everyday life including, exercise, aging, and pathology.

Course Modality

1. Twice weekly lectures (face-to-face) in [E100 Veterinary Medical Center](#).
2. Lecture slides will be posted on D2L prior to lecture.
3. Video recordings of past lectures will be posted on D2L after lecture.

4. All exams will be online during the regularly scheduled class time.
5. In the event the university requires remote learning, PSL250 will be run asynchronously with content and assessments delivered on D2L and Connect.

Required Textbook & Course Materials

- Fox *Human Physiology* 16ed. ISBN 9781266687853. The textbook comes with access to McGraw-Hill Connect. The ISBN listed above is for the Looseleaf/Connect Combo and also gives you access to the textbook online. The textbook can be purchased on campus at the **Spartan Bookstore** or at the **Student Bookstore** located at 421 East Grand River Avenue. You can also purchase the course material through McGraw-Hill Connect by way of the link provided on D2L.

Required Technologies

- A laptop computer with a functioning web camera is required for this course. We will be using laptops to complete all assignments and assessments including exams. The software programs we will be using this semester works well with the most recent versions of Safari, Firefox, and Chrome. Before the semester starts please take a moment to up-date your web browser and, if necessary, your computer's operating system. For additional information about MSU's laptop requirement please click on the following link [MSU's laptop requirement](#). If you have any questions or concerns about these requirements please do not hesitate to contact the teaching team. You may contact [MSU technology](#) for technical assistance from 7am to midnight any day the University is open.
- A high-speed internet connection is required to access the course websites. The following links provide useful information about [browser/mobile support for D2L](#), the [internet speed](#) you will need for this course as well as access to [high-speed internet access away from campus](#).
- All assignments including: lecture review questions, reading assignments, chapter assignments, practice quizzes, and all exams will be deployed through D2L and the McGraw-Hill Connect website. For exams you will need to download a specific program Proctorio which works with Connect. Proctorio is a lockdown browser designed to promote academic integrity. You will access all assignments through links available on the course D2L website only. If you are having technical difficulties with Connect please contact [Connect](#) directly. The McGraw-Hill Connect support team is amazing and, as an added benefit, they are available essentially 24/7.

Course Policies

Learning Continuity Statement

If you are unable to participate in class for an extended period of time:

- You are expected to contact your instructor as soon as you are able.
- In most cases the regular course policies related to grading and assignments will apply.
- In extraordinary cases, with appropriate documentation, we will work with the student to develop an appropriate plan of action for successful completion of the course.

Course Continuity Statement

In the unlikely event that your instructor is unable to participate in the course for an extended period of time:

- An announcement and a contingency plan will be posted on the course D2L website.

Prerequisites

- N/A

Course Platform/Structure

This course will be delivered in a traditional face-to-face format. The class meets on Tuesdays and Thursdays from 12:40pm - 2:30pm. All exams will be administered online **during** the regularly scheduled course meeting dates and times. The final exam will be online and available on Wednesday, May 3rd, from 10:00AM to 12:00 Noon.

Technical Assistance

For your convenience the web addresses and phone numbers for course related technical assistance are provided below.

- Contact McGraw-Hill Connect at 1-800-331-5094 or visit them online at [McGraw-Hill Connect](#)
- Visit the MSU Help site at <http://help.msu.edu>
- Visit the Desire2Learn Help Site at <http://help.d2l.msu.edu>
- Call the MSU IT Service Desk at (517)432-6200, (844)678-6200, or e-mail at ithelp@msu.edu
- [Browser/mobile support for D2L](#).
- [Guide for internet speed](#). For this course, 25 Mbps should work.

Instructional Objectives

Course Objectives: After successfully completing PSL250, students will be able to explain the following “core concepts in physiology”:

1. **Scientific Reasoning:** Physiology is a science. Our understanding of the body arises from the application of the scientific method; thus, our understanding is always tentative.
2. **Causality:** The function of living organisms can be explained by a description of the cause-and-effect relationships that are present.
3. **Homeostasis:** The internal environment of the organism is actively maintained constant by the function of cells, tissues, and organs organized into negative feedback systems.
4. **Energy:** The life of an organism requires the constant expenditure of energy. The acquisition, transformation, and transportation of energy are essential functions of the body.
5. **Structure/Function:** The function of a cell, tissue, organ is determined by its form. Structure and function (from the molecular level to the organ system level) are intrinsically related to each other.

6. **Levels of organization:** An understanding of the physiological functions requires understanding the behavior at every level of organization from molecular to whole organism.
7. **Cell membrane:** The plasma membrane of cells is a complex structure that determines what substances enter or leave the cell. Cell membranes are essential for cell signaling and transport.
8. **Cell-to-cell communication:** The function of an organism requires that cells pass information to one another to coordinate their activities. These communication processes include neural and endocrine signaling.
9. **Cell theory:** Cells have many common functions but also many specialized functions that are required by the organism.
10. **Flow down gradients:** The transport of “stuff” (ions, molecules, blood, and gas) is a central process at all levels of organization of the organism and this simple model describes such transport.
11. **Interdependence:** Cells, tissue, organs, and organ systems interact with one another (are dependent on the function of one another) to sustain life.
12. **Physics/chemistry:** The functions of living organisms are explained by applying the laws of physics and chemistry.

The “Core Concepts in Physiology” are adapted from: Michael J, McFarland J. The core principles (“big ideas”) of physiology: results of faculty surveys. *Adv Physiol Educ.* 2011 Dec; 35(4):336-41. doi: 10.1152/advan.00004.2011.

Graded Assignments: Access all of your assignments through the links provided in D2L. The links in D2L will bring you to your assignments which are completed on the McGraw-Hill Connect course website. **If you bypass D2L your grade will not be recorded in the D2L gradebook.** To familiarize yourself with Connect please watch the tutorial videos provided on D2L located in the ‘**Start Here**’ folder. Additional material to help you navigate Connect is available on the Connect website.

Lecture review questions (2 points each): There will be 4-6 questions due before the start of each lecture session (excluding the first lecture session) about topics covered in the previous lecture session. These questions will be deployed on Connect through a link provided in the D2L. The goals of these questions are two-fold: 1, to test your understanding of the big concepts and topics covered in the previous lecture and 2, to refresh your memory about what was covered previously. Questions will be posted 24 hours prior to the due date. You will be awarded 2 points for correctly answering the questions and you can redo the assignment as many times as you would like prior to the due date to earn full credit. After the due date you can review/retake the assignments as a way of reviewing the material. **Late assignments will not be accepted.**

Smartbook reading assignments (10 points each chapter*): Smartbook uses a digital version of your textbook with embedded questions carefully curated to reflect the topics most relevant to this course and the material covered in lecture. Smartbook assignments are

designed to be active reading assignments and can last anywhere from 30 to 45 minutes. In general, the Smartbook assignments are designed to be completed before we cover the material in lecture. Each Smartbook assignment is worth 10 points and the due dates for these assignments are listed on the course schedule and on your D2L calendar. Typically these assignments are due on the Sunday evenings (11:59pm) the week we cover those topics in lecture. After the due date you can review/retake these assignments as a way of reviewing the material. **Late assignments will not be accepted.** *Some chapters are broken into two smaller assignments and are worth 5 points each for a total of 10 points for the chapter.

Chapter assignments (10 points each): Chapter assignments are a series of questions related to your readings and lecture material. Depending on the Module, a chapter assignment may include questions from one or more chapters and this is clearly indicated on the course calendar. Each chapter assignment is worth 10 points and you have an unlimited number of attempts to complete the assignment to earn full credit prior to the due date. Chapter assignments are usually due on Monday evenings (11:59pm) but always check the course calendar on D2L to confirm. The homework assignments can be turned in late but will be penalized 20% for each day past the due date and will not be accepted for credit more than 5 days after the due date.

Course Outline/Schedule

The table below shows the **tentative schedule** for PSL250 Spring 2023. Column 1 shows the week and class meeting dates while column 2 lists, in chronological order, the topic(s) covered, or Module exam. Note if changes to the schedule are needed they will be posted on the course D2L website.

Week	Topic, Assignments, and Assessments
1 1/10, 1/12	Chapter 1: The Study of Body Functions
2 1/17, 1/19	Chapter 3: Cell Structure (3.1, 3.2) Chapter 5: Cell Respiration and Metabolism (5.1, 5.2)
3 1/24, 1/26	Module 1 Exam (1/24, 1:00PM - 2:00PM, Lectures 1 - 4) Chapter 6: Interactions Between Cells and Extracellular Environment
4 1/31, 2/2	Chapter 6: Interactions Between Cells and Extracellular Environment Chapter 7: The Nervous System
5 2/7, 2/9	Chapter 7: The Nervous System
6 2/14, 2/16	Module 2 Exam (2/14, 1:00PM - 2:00PM, Lectures 5 - 9) Chapter 8: The Central Nervous System
7	Chapter 9: Autonomic Nervous System

2/21, 2/23	Chapter 10: Sensory Physiology
8 2/28, 3/2	Chapter 11: Endocrine Physiology
3/06 - 3/10	Spring Break
9 3/14, 3/16	Module 3 Exam (3/14, 1:00PM - 2:00 PM, Lectures 10 - 14) Chapter 12: Muscle Physiology
10 3/21, 3/23	Chapter 12: Muscle Physiology Chapter 13: Blood Heart and Circulation
11 3/28, 3/30	Chapter 13: Blood Heart and Circulation Chapter 14: Cardiac Output, Blood Flow and Blood Pressure
12 4/4, 4/6	Module 4 Exam (4/4, 1:00PM - 2:00 PM, Lectures 15 - 19) Chapter 16: Respiratory Physiology
13 4/11, 4/13	Chapter 16: Respiratory Physiology Chapter 17: Renal Physiology
14 4/18, 4/20	Chapter 17: Renal Physiology Chapter 18: Digestive Physiology
15 4/25, 4/27	Chapter 18: Digestive Physiology Review Session
5/3	Final Exam: May 3rd, 10:00 AM - 12 Noon

Grading Policy

[MSU Final Exam Policy](#): No student should be required to take more than two examinations during any one day of the final examination period. Students who have more than two examinations scheduled during one calendar day during the final examination period may contact the Academic Student Affairs Office in their colleges for assistance in arranging for an alternate time for one of the three examinations.

Graded Course Activities

Listed below are graded course activities and associated points.

Assignments and Assessments	Points
Lecture Review Questions (25 @ 2 point each)	50
SmartBook Chapter Readings (15 @ 10 each chapter)	150
Chapter Assignments (14 @ 10 points each)	140
Quizzes (quiz #1 5 points, all other 1 point)	10
Module 1 Exam	50
Module 2 Exam*	100
Module 3 Exam*	100
Module 4 Exam*	100
Module 5 Exam**	160
Total Points Possible***	760

Exams Policies:

- All exams will be administered online and must be taken on the date and time indicated on the syllabus, no exceptions.
- The online exams require a specific program called Proctorio which works with Connect. Proctorio is a lockdown browser designed to promote academic integrity.
- Proctorio records you taking the exam therefore a working web camera is required for the course.
- Be sure to take the exam in a quiet location with good stable internet access. You may not be able to access the exam or you may be kicked out of the exam if your internet connection is unstable.
- The main library has stable internet and is usually not busy during our regularly scheduled class time.
- It is the students responsibility to ensure they have the appropriate technology including high-speed internet to take the exams.
- Talking during the exam is strictly prohibited.
- You are not allowed to wear headphones during the exam - noise canceling or otherwise.
- You are not allowed to use additional technology, notes or supplementary materials during the exam.
- Violation of these policies could result in a zero on the exam and possibly a failing grade in the course.
- *You can drop your lowest exam score from exams 2,3, or 4. You cannot drop a '0' you received for not taking an exam. You have to take all the exams.
- ** The Module 5 Exam includes a 60 point cumulative portion which is on material covered in Modules 1 - 4. The specific learning objectives you will be tested on for that portion of the final exam will be made available to you two weeks prior to the final exam.
- ***Total points reflects a dropped exam (Modules 2-4)

Missed Exams:

- A missed exam will be entered as a “o” in the grade book. A make-up exam will only be granted under extenuating circumstances such as a legitimate health emergency (serious illness, not a cold) or other serious extenuating circumstances (refer to grievance policy below).
- Documentation of the emergency must be provided by a physician on their letterhead, with their signature and contact information. Dr. Towse reserves the right to contact the physician regarding the illness/condition.
- Forgetting there was an exam is not considered an extenuating circumstance. Failing to plan accordingly and finding that where you are staying on your family vacation does not have internet access also does not qualify as an extenuating circumstance.
- If you unexpectedly miss an exam, contact Dr. Towse within 24 hours of the exam.
- Note: the make-up exam may not be the same as the exam given during the normal exam period. Instructors reserve the right to use an alternate exam/final.
- Any make-up exams must be taken within one week of the original exam date.

Grade Assignment (Grading Scale)

The table below shows the relationship between the percentages of points earned in the course and the assigned grade on a 4.0 scale.

Percentage of Points Earned	Assigned Grade
90% or above	4.0
85.0 - 89.99%	3.5
80.00 to 84.99%	3.0
75.00 to 79.99%	2.5
70 to 74.99%	2.0
65 to 69.99%	1.5
60 to 64.99%	1.0
0 to 59.99%	0

Grade Dissemination

All grades will be posted to D2L in a timely manner. Note: if you wish to challenge a grade you've earned on one of your assignments you need to email Dr. Towse no later than **one week** after the due date for that assignment. Failure to challenge your grade by this timeline indicates you accept your grades/scores as posted in D2L.

Other Course Policies

Accommodations for COVID-19 and other Serious Health Conditions

COVID-19: If you have been sick with COVID-19 [symptoms](#), have tested positive for COVID-19, or have been potentially [exposed](#) to someone with COVID-19 please follow CDC guidance to [self-isolate or stay home](#). Accommodations will be made for any student who must miss class due to COVID-19 illness or self-isolation so that it will not harm their performance or put them at a disadvantage in the class. Contact Dr. Leininger to arrange accommodations.

Other Serious Health Conditions: Contact Dr. Towse as soon as possible to discuss potential accommodations.

Attendance Policy

Attendance at lectures is not required but strongly encouraged. Attendance at the in-class assessments (exams) is required.

Assignment Submission Guidelines

All assignments are accessed through links in D2L and completed on the McGraw-Hill Connect course website.

Late Work Policy

It is imperative that you keep up with the course material including attending lectures, and completing all the assignments previously discussed. Failure to keep up with the pace of the course will make this course extremely difficult. Except for the Chapter Homework assignments, late assignments will not be accepted.

Participation Policy

Your participation in the lecture is strongly encouraged. I suggest you ask and answer questions, post questions to the discussion board and generally stay engaged. You will get out of this course as much as you put into it.

Technology and Media

- Please post all content or course related questions that are not of a private nature to the course discussion board on D2L. If your question is of a personal nature please feel free to email Dr. Towse or any member of the teaching team.
- Cellphone/Smartphone Usage: please do not use your phone in class. If you must take/make a call or receive a message, take a second to step out in the hallway and return when you are ready to re-engage in the class. If you know you will need to take a call please inform me ahead of time and step out of the classroom to take your call.
- Use of cell phones or any additional technology during exams is strictly prohibited.

- D2L: will serve as the course website and can be found @ d2l.msu.edu. Once there, log in using your MSU NetID and password. After logging in, you will see a link to the specific webpage for this course. If you do not see this link, search for the course and then pin it to your main page or check with the Office of the Registrar to make sure that you are officially enrolled in the course and D2L. Please note that I do not have the administrative clearance to enroll students in my D2L course. The Office of the Registrar controls your enrollment in the course and D2L.
- All course materials (e.g., syllabus, lecture videos, PowerPoint lecture slides, assessments) are posted in D2L. The information will be made available to you in Modules. After the Module 1 exam has been completed Module 2 material will be made available, and so on.
- McGraw-Hill Connect will be used to host all assignments related to the course. Links on D2L should be used to access the Connect assignments. Hosting assignments on Connect allows for a greater variety of high quality assignments and rapid grading and posting of the results. In addition for exams you will need the software Proctorio which is a lockdown browser paired with Connect during the exam to ensure academic integrity.

Course Recordings, Intellectual Property and Social Media Use

- Lectures may be recorded and made available on the D2L course site within 24 - 48 hours of the class meeting time. Recorded lectures are not intended to replace regular attendance but are considered a supplement to the classroom experience.
- Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures.
- Recordings may not be reproduced, shared with those not in the class, or uploaded to other online environments. Doing so may result in disciplinary action.

Institutional Data Policy

<https://tech.msu.edu/about/guidelines-policies/msu-institutional-data-policy/>

Student Privacy Guidelines and Notification of Rights under FERPA

<https://reg.msu.edu/ROInfo/Notices/PrivacyGuidelines.aspx>

As members of a learning community, students are expected to respect the intellectual property of course instructors. All course materials presented to students are the copyrighted property of the course instructor and are subject to the following conditions of use:

- Students may not record lectures or other classroom activities without the advance written permission of the course instructor and, if applicable, any students whose voice or image is included in the recordings.
- If a recording is made, students may not share the recordings with other students enrolled in the class. Sharing is limited to using the recordings only for their own course-related purposes.
- *Video and audio recordings made of online lectures may contain inaudible or invisible watermarks to identify shared media:*

<https://support.zoom.us/hc/en-us/articles/360021839031-Audio-Watermark>

- Students **may not** post the recordings or other course materials online or distribute them to anyone not enrolled in the class without the advance written permission of the course instructor and, if applicable, any students whose voice or image is included in the recordings.
- Any student violating the conditions described above may face academic disciplinary sanctions.

Student Policies and Expectations

The All-University Policy on Integrity Of Scholarship and Grades

All participants in this class are held to the standard set by MSU's Policy on Integrity of Scholarship and Grades. The policy can be read in full at the [MSU Ombudsperson's website](#).

I have no tolerance for cheating. If you are suspected of cheating on an exam a formal complaint will be filed with the MSU Office of Student Support and Accountability. Disciplinary action may include one of the following; retaking a revised version of the exam which may be an essay or oral exam, receiving a grade of zero on the exam, or failure of the course.

Spartan Code of Honor

On March 22, 2016, The Associated Students of Michigan State University (ASMSU) adopted the following Spartan Code of Honor:

“As a Spartan, I will strive to uphold values of the highest ethical standard. I will practice honesty in my work, foster honesty in my peers, and take pride in knowing that honor is worth more than grades. I will carry these values beyond my time as a student at Michigan State University, continuing the endeavor to build personal integrity in all that I do.”

Disability Access

“Michigan State University is committed to providing equal opportunity for participation in all programs, services and activities. Requests for accommodations by persons with disabilities may be made by contacting the Resource Center for Persons with Disabilities at 517-884-RCPD or on the web at rcpd.msu.edu. Once your eligibility for an accommodation has been determined, you will be issued a verified individual services accommodation (“VISA”) form. Please present this form to me at the start of the term and/or two weeks prior to the accommodation date (test, project, etc). Requests received after this date will be honored whenever possible.”

Inclusion

“MSU welcomes a full spectrum of experiences, viewpoints, and intellectual approaches because they enrich the conversation, even as they challenge us to think differently and grow. However, we believe that expressions and actions that demean individuals or groups compromise the environment for intellectual growth and undermine the social fabric on which the community is based.” -MSU Faculty Senate 2017.

Expected Hours of Participation/Work Outside Class Per Week

Expect to study at least 3 hours outside of class for every 1 hour of time you spend in class. Therefore, with approximately 4 hours of in-class time per week you should aim to spend about 12 hours outside of class studying for this class. Note, individual differences may exist as some students may need to study more or less to achieve their desired goals in the course.

Grief Absences and Mental Health

If you experience the death of a family member or emotional distress from a similar tragedy, refer to [MSU's Grief Absence Policy](#). A Grief Absence Request Form is available on this [Student Resources](#) page and is located on the left right side of the page under the "Other Links menu".

For resources related to Mental Health please see: [Mental Health](#).

Professionalism Policy

"MSU strives to build an academic community with living and learning environments that expects tolerance of viewpoints and civility toward others, whether at public forums, athletic events, in residential communities, classrooms or laboratories."

"We call upon all who participate in university events to promote tolerance and civil behavior and to hold themselves to high standards that reflect the university's commitment to respect viewpoints that may be different from their own. Only by respecting individuals with diverse perspectives and ideas can we build an environment of civility that is conducive to advancing knowledge and transforming lives."

Student Rights and Responsibilities

Students have a range of support and information options available to them to discuss actions or activities related to their academic, personal or professional lives at MSU. These rights and resources are detailed on the [ombudsperson's website](#).

Limits to Faculty/Student Confidentiality; Mandatory Reporting

MSU Policy on Relationship Violence and Sexual Misconduct.

Available on the [RVSM website](#).

[RVSM Limits to Confidentiality](#)

Religious Observances

Students are expected to notify their instructor in advance if they intend to miss class to observe a holy day of their religious faith. Refer to the registrar's page on [religious observance](#)

[policy](#). For a current schedule of major religious holidays, see the [office of inclusion and intercultural initiatives](#).

Pronouns

Please follow posted [MSU guidelines regarding use of pronouns](#).

Emergency Procedures

In the event of an emergency arising within the [classroom/lab], the [Professor, Teaching Assistant (TA), graduate student, instructor, Facilitator] will notify you of what actions that may be required to ensure your safety. It is the responsibility of each student to understand the evacuation, “shelter-in-place,” and “secure-in-place” guidelines posted in each facility and to act in a safe manner. You are allowed to maintain cellular devices in a silent mode during this course, in order to receive emergency SMS text, phone or email messages distributed by the university. When anyone receives such a notification or observes an emergency situation, they should immediately bring it to the attention of the [Professor, Teaching Assistant (TA), graduate student, instructor, Facilitator] in a way that causes the least disruption. If an evacuation is ordered, please ensure that you do it in a safe manner and facilitate those around you that may not otherwise be able to safely leave. When these orders are given, you do have the right as a member of this community to follow that order. Also, if a shelter-in-place or secure-in-place is ordered, please seek areas of refuge that are safe depending on the emergency encountered and provide assistance if it is advisable to do so.” Prepared by: Captain Penny Fischer Michigan State University Police.

Policies for Student Athletes

See MSU policies on [Student Athletes](#).