Syllabus: Human Physiology I (PSL 431), 4 Credits

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.

Lectures: M, W, F, 1:50 – 2:40 PM, 1281 Anthony Hall

Required Materials: There are two required materials

1) **Textbook:** Physiology: From Cells to Systems, by Lauralee Sherwood, Cengage Publishing; 9th edition + LMS Integrated for MindTap. ISBN 9781305774605
2) **Four Function Calculator:** A simple four-function calculator will be necessary for the latter half of the course. Graphing calculators, tablets, computers or phones are NOT acceptable.

Goal of this Class: Describe how the body works at the cellular, tissue and system levels

Instructors: PSL 431 is a *team-taught* course. There are 3 instructors for the semester.

Instructor	Phone	Email	Office	Office Hours
Gina Leinninger, Ph.D. *(& Course Coordinator)* Pronouns: she/her/hers	884-5123	leinning@msu.edu	3183 BPS	M 9:30-10:30 AM & Th 2-3 PM ***or by appointment***
Hongbing Wang, Ph.D.	884-5119	wangho@msu.edu	3179 BPS	T & Th, 2 – 3 PM
Richard Miksicek, Ph.D.	884-5120	miksicek@msu.edu	2240B BPS	W & F, 3 – 4PM ***or by appointment***

TAs & Recitations

Section	Day	Time	Location	TA	Email
1	W	10:20 -11:10 AM	A326 Wells Hall	Thomas Turkette	turkette@msu.edu
5	Th	1:50 - 2:40 PM	2400 Engineering Bldg		
2	W	10:20 -11:10 AM	A158 Plant & Soil Sci Bldg	Zayn Al-Zahid	alzahidz@msu.edu
4	Th	11:30-12:20 PM	307 Ernst Bessey Hall		
3	W	11:30-12:20 PM	A158 Plant & Soil Sci Bldg	Amber Garrison	garri119@msu.edu
6	Th	6:30-7:20 PM	1420 Biomed & Phys Sci		

Tutors: Contact Dr. Leinninger if you are interested in obtaining a tutor.

Important Dates:

- 9/4/19: Open Add Period Ends
- 9/23/19: Last day to drop with tuition refund. No grade reported.

Access D2L for Course Materials

- The D2L folder **FS19-PSL-431-Human Physiology I_ALL SECTIONS** contains:
    - Lecture and Recitation Materials
    - Weekly Practice Questions (optional, but strongly encouraged!)
    - Review Quizzes (**GRADED – find these in the Calendar and Lecture Materials!)**
    - Practice Exams
    - Recorded Lectures
    - Grades

Lecture Format:

- **38 lectures are given live by instructors,** recorded live and then subsequently posted to D2L. Recorded lectures are available for viewing but **not** download due to copyright restrictions.

- Glitches sometimes occur with recording and we do not guarantee that all lectures will be recorded/posted. Thus, if you don't attend the "live" lecture, you run the risk of missing material.

- All course materials are the copyrighted property of the course instructors and Michigan State University. Students are therefore not permitted to make, post, or otherwise distribute recordings of lectures or other course material without the advance written permission of the course instructor.

Recitation Format:

- **13 Recitations are led by TAs** and focus on a challenging concept (or 2) from the previous lectures. Recitations will enable you to "actively exercise" concepts to enhance your learning.

- **Download Recitation materials and work through them PRIOR to coming to Recitation.** Preparing ahead of time will help you get the most of out the recitation.

- **There is a Quiz at the end of each recitation (5 multiple choice questions, 10 points)**

    - The quiz only covers material from the recitation. If you work through the recitation materials ahead of time *and* participate in the recitation you should be able to ace it.
    - One quiz question will come from the weekly practice questions

- **Your 3 lowest quiz scores (out of 13) will be dropped.**
- **No make-up quizzes will be given. If you miss recitation, you get 0 points on the quiz.**

Honors Option

Read the information on the PSL-431 Honors Option, found at **D2L → Content → HONORS OPTION.** Then, if interested, email Dr. Leinninger to initiate the Honors Option process. The online Honors Option contract must be completed and filed BY THE END OF THE DAY ON SEPTEMBER 26th, 2018 to be eligible. Any member of the PSL-431 instructor team may supervise an Honors Option, which consists of writing a 10-12 page paper on a topic agreed upon by you and instructor.

Grading

There are 695 points in this class. These come from:

Item	Points	# Questions	Notes	% of Grade
Syllabus Quiz	5	5	See D2L	1%
10 Review Quizzes	50	10 per quiz	5 points per Quiz	7%
13 Recitation Quizzes	100	5 per quiz	Really 130 pt, but Drop 3 quizzes	14%
Exam 1	90	30	3 points per question	13%
Exam 2	90	30	3 points per question	13%
Exam 3	90	30	3 points per question	13%
Exam 4	90	30	3 points per question	13%
Cumulative Final	180	60	3 points per question	26%
TOTAL POINTS	**695**			

- **Review Quizzes:** There are 2 review quizzes per unit (Cell, Nervous, Circulatory, Vascular and Respiratory) for a total of 10 quizzes. There are 10 questions per quiz, each worth 0.5 points. Each quiz is offered during an ~3 day "release window" on D2L; after the window closes the quiz CANNOT be made up. SEE D2L COURSE CALENDAR AND LECTURES SECTION FOR THE QUIZ RELEASE WINDOWS AND LINKS TO QUIZZES. *Review quizzes include exam-level questions to encourage you to prepare in a timely and appropriate fashion.*
- **Recitation Quizzes** are composed of 5 multiple-choice questions, 2 points each. *Note that recitation quiz questions are much easier than exam questions, while you LEARN concepts!*
- **Exams 1 - 4** are each composed of 30 multiple-choice questions, 3 points each. *Practice exam questions are similar in difficulty to the real exams. Use practice exams to prepare!*
- **The Cumulative Final** consists of 30 multiple-choice questions from the final section of the course (similar to a regular exam) **plus** 30 multiple-choice cumulative questions (e.g. questions from the first 4 sections of the course.) Each question is worth 3 points.

Final Course Grades

- Track your earned points on D2L: select "Assessments" and then select "Grades"
- Grades are determined by the percentage of points earned out of the total possible 695 points.
- Students earning:
  - ≥90% of possible points will receive a 4.0.
  - 89-80% of possible points will receive a 3.0 or better.
  - 79-70% of possible points will receive a 2.0 or better.
  - 69-60% of possible points will receive a 1.0 or better.
- In practice, the straight grading scale described above *may* be curved, if needed, to adjust for yearly variations in test difficulty and class performance. The final grade curve will not be more rigorous than the straight grading scale and will be designed to help, not hurt, the student.

- Petitions to re-evaluate a course grade will be considered in writing only (e-mail) and must be submitted to Dr. Leinninger within one week after the beginning of the semester following completion of this 2018 PSL 431, according to University guidelines.

Missed Exams:

- Make-Up Exams are only possible if a student has a *legitimate health emergency* (serious illness, not a cold) or 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. Leinninger reserves the right to contact the physician regarding the illness/condition that caused the student to miss the exam.

- If you unexpectedly miss an exam, Contact Dr. Leinninger within 24 hr of the exam. Make-ups will be negotiated solely with Dr. Leinninger.

- Note that a 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.

Who to Contact If You Have Questions About…

- **Grading, D2L Issues and Lecture Recordings, Adding, Dropping, Registration Issues, Exam Conflicts:** Contact Dr. Leinninger

- **Course Content:** Contact the Instructor who taught the particular lecture/concept

- **Recitation:** Contact the TA of your section via their email address.

- **Attending a Different Recitation Section:** If you have a good reason for needing to attend a different recitation section (e.g. illness, unavoidable travel conflict, etc.) then **get permission from Dr. Leinninger PRIOR to attending any other recitation section.**

Accommodations for Students with Disabilities:

- 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. RCPD is located in 120 Bessey Hall, near the center of the Michigan State University campus, on the southwest corner of Farm Lane and Auditorium Road. Students **must** be registered with RCPD in order to obtain a VISA

- Contact Dr. Leinninger regarding accommodations at the start of the semester, and provide your RCPD-issued VISA.

- Accommodation arrangements must be made at least 2 weeks prior to the exam or final. Requests received after this date will be honored whenever possible, but cannot be guaranteed.

TIPS TO SUCCEED IN PSL 431: (How other students aced this class)

1) **READ BEFORE EACH CLASS** so you are prepared for the lecture. Having some idea of the concepts will help you make the most of the lecture period.

2) **REVIEW YOUR NOTES OFTEN.** Ideally do this *after each lecture and again before the next one.* Spending an hour out of class for each hour in lecture will help a lot.

3) **STAY CURRENT.** Each concept builds upon the one before, so you need to keep up with the material. DO NOT wait until the week before an exam to study--- you will be lost.

4) **PUT IT INTO YOUR OWN WORDS**. Don't just passively look at lecture notes or listen to a lecture, that isn't enough. **You** need to actively work with the material to learn it at a sophisticated level. Past students suggest the following techniques to master the material:

   - **After you've listened to lecture and reviewed it a few times, Re-write each lecture to explain concepts in *your own words / pictures*.** Do this within 1 week of the lecture. Handwriting works best for this because it gives your brain some time to synthesize what you are trying to learn. ***(Seriously, re-writing / drawing out each lecture in your own words is Dr. L's #1 suggestion for PSL-431 success!!!)***

   - Then, test yourself by covering up everything but the title from a lecture slide: can you describe the main "point" or process on the slide? If not, re-write and study till you can!

   - Teach a concept to someone else (this will test if you really know it…)

5) **WRITE OUT ANSWERS TO THE LEARNING OBJECTIVES**. This is the material that instructors are expecting you to understand for the exam, so you should know it!

6) **INTEGRATE CONCEPTS.** Simply memorizing the notes will **not** enable you to pass this class. Really. You need to be able to deeply understand the pathways, mechanisms and **connect** them to other topics/mechanisms. Re-writing lectures and recitations will help.

7) **PRACTICE MULTIPLE CHOICE QUESTIONS.** The format of the exams/quizzes can trip students up. Practice with sample multiple choice questions in advance. Tips for this:
   - Carefully read the question. What is it asking for?
   - Next, look at each option as if it were a true / false question.
   - **Write out WHY each option is true or false. What makes it false, if anything?**
   - This process will help you identify the right option by *understanding why the other options are not right.*

8) **ASK QUESTIONS AND DO IT SOON!** Let your instructor or TA know if you are having trouble with a concept: we can't help if we don't know that there is a problem.

Policy on Overlapping Finals:

- According to University policy you may be eligible to take the final exam at an alternative time **IF** you have 2 final exams scheduled at the same time **OR** you have 3 final exams scheduled on the same calendar day (e.g. 3 final exams on the same Friday; does not apply if the 3 finals are scheduled within a 24 hr period over adjacent days.)

- **If either of these situations applies to you, CONTACT DR. LEINNINGER AT LEAST 2 WEEKS BEFORE THE FINAL WEEK OF CLASSES** and she will schedule an alternate time for you to take the final exam. Requests made after this time will not be honored.

- Note: when a conflict as described above arises because of use of a common final (as in some multi-section chemistry courses), the course utilizing the common final will normally be responsible for scheduling an alternate for those students for whom conflicts arise (as per official MSU exam scheduling policy.)

Rules for the Exams and Final:

- NO notes or electronic devices are permitted for use during the exam/final. This includes cellular phones, music players/iPods, tablets, computers or any sophisticated personal calculators that exceeds a Four-Function capability (e.g. add, subtract, multiply, divide.)

- No questions on content will be answered during the exams. This policy is necessary because exams may be given in different locations and we wish to avoid any room/proctor bias.

- *Exams are computer scored based on answers on Scantron sheet. Exam results will be sent* by email directly from the MSU Scoring Office to each enrolled student, usually within 1 wk of the exam date. It is the responsibility of the student to assure that his/her exam was graded correctly. These scores will be uploaded into the D2L gradebook.

- Any appeals for additional credit on an exam because of a scoring error or student appeal to re-evaluate individual questions must be submitted in writing (email) to the relevant instructor and Dr. Leinninger within 1 week of the time exam results are distributed. Appeals must provide justification for why the scoring issue or alternate answer deserves to receive credit. You cannot appeal a question that you failed to answer on the scantron sheet.

Course and Instructor Evaluation:

- The SIRS Online system will be used for evaluation of PSL 431
- Students are encouraged to submit their opinions of the course and individual instructors at the end of each semester via the SIRS Online site
- Students must complete the SIRS Online form or indicate within that form that they decline to participate. Otherwise, final grades will be sequestered for 7 days following the course.
- An “Opt Out” option is possible and Student anonymity is carefully protected.

Academic Honesty:

- Article 2.3.3 of the *Academic Freedom Report* states "The student shares with the faculty the responsibility for maintaining the integrity of scholarship, grades and professional standards." In addition, the Department of Pysiology adheres to the policies on academic honest as specified in General Student Regulations 1.0, *Protection of Scholarship and Grades;* the all-University Policy on *Integrity of Scholarship and Grades;* and Ordinance 17.00, Examinations.

- **You are expected to complete all quizzes, exams and the final without assistance from any source. Students who violate MSU rules may receive a penalty grade including, but not limited to, a failing grade on the quiz/exam/final or in the course**

Grief Absence Policy:

Michigan State University is committed to ensuring that the bereavement process of a student who loses a family member during a semester does not put the student at an academic disadvantage in their classes. Students should file a Grief Absence Request Form no later than one week after knowledge of the circumstance. This can be found at https://reg.msu.edu/Forms/StuInstr/Menu.aspx under Student Resources → Forms → Grief Absence Request Form. Next, the college representative and student determine the expected period of absence. The college will then inform Dr. Leinninger, who will then work with the student to make appropriate accommodations so that they are not penalized due to a verified grief absence.

Representative for the College of Natural Science**:** Heidi Purdy**,** purdyh@msu.edu
Representative for the Lyman Briggs College: Amy Martin, mart1742@msu.edu

OPTIONAL Exam Help Sessions:

- Help Sessions are held prior to each exam and the final. Attendance is OPTIONAL.
- Instructors are present and can answer questions during that time, including regarding weekly practice or practice exam questions.
- Instructors will NOT lead a formal review of all lessons/concepts covered on the exam. It is up to you to come and ASK QUESTIONS.

EXAMS - MANDATORY HELD IN 1281 ANTHONY DURING LECTURE TIME (1:50-2:40 PM)		**Exam Help Sessions (Attendance Optional) HELD IN 1281 ANTHONY**	
Exam	**Exam Date**	**Help Session Date**	***Time***
Exam 1	9/23/19 (MON)	9/20/19 (FRI)	3:30 - 5:00 PM
Exam 2	10/21/19 (MON)	10/18/19 (FRI)	3:30 - 5:00 PM
Exam 3	11/4/19 (MON)	11/1/19 (FRI)	4:15 - 5:45 PM
Exam 4	11/25/19 (MON)	11/22/19 (FRI)	4:15 - 5:45 PM
Final Exam	12/11/19 (WED)	12/9/19 (MON)	2:00 - 4:00 PM

Lecture and Recitation Schedule:

L # = Lecture Number
R # = Recitation Number: lectures from *previous week* may be covered in recitation
Dates in Red are Fridays
Thick Gray lines separate weeks
Exams are indicated in Blue Bold Text

Date	L #	Lecture Title	Reading	Instructor	R #
UNIT ON CELL PHYSIOLOGY: LECTURES 1 - 9					
28-Aug	1	Course Intro, Homeostasis & Plasma Membrane	Chapter 1	Leinninger	No
30-Aug	2	Principles of Plasma Membrane Transport	Ch 3 - 3.5	Leinninger	Rec.
2-Sep		Labor Day Break - NO LECTURE			
4-Sep	3	Membrane Potential and Protein Transport	Ch. 3.6 + 2.3-2.4	Leinninger	
6-Sep	4	Receptors	Ch. 4.5 - 4.7	Leinninger	1
9-Sep	5	Epithelial Cells	pg 6, 74-75, TBD	Leinninger	
11-Sep	6	Neurons: Strucutre and Excitability	Ch. 4 - 4.3	Leinninger	2
13-Sep	7	Neurons: Syanptic Mechanisms	Ch 4.4	Leinninger	
16-Sep	8	Muscles: Skeletal & Neuromuscular Junction	Ch 8 - 8.3 + 7.2-7.3	Leinninger	
18-Sep	9	Muscles: Cardiac & Smooth Muscle	Ch 8.6	Leinninger	3
UNIT ON NERVOUS SYSTEM: LECTURES 10 - 18					
20-Sep	10	Vision	Ch 6.3	Leinninger	
23-Sep		**EXAM 1 (Cell Phys): Covers Lectures 1-9**			
25-Sep	11	Hearing	Ch 6.4	Leinninger	4*
27-Sep	12	Intro to Nervous System Structure and Function	Ch 5.1-5.6, 5.8-5.10	Wang	
30-Sep	13	Reflexes and Sensory pathways	Ch 5.10, Ch 6.1, 6.2	Wang	
2-Oct	14	Sensory Pathways (continued)	Ch 6.1, 6.2	Wang	5
4-Oct	15	Somatic Motor Pathways: Reflex and Voluntary	Ch 7.3	Wang	
7-Oct	16	Autonomic Motor Pathways	Ch 7	Wang	
9-Oct	17	Autonomic Neuro-Effector Junction	Ch 7	Wang	6
11-Oct	18	Clinical Apps: Receptor Agonists and Antagonists	Handout	Wang	

Date	L #	Lecture Title	Reading	Instructor	R #
UNIT ON CARDIAC SYSTEM: LECTURES 19 - 25					
14-Oct	19	Overview of the Circulatory System & Anatomy of the Heart	Ch 9.1, 9.5, p 344	Miksicek	
16-Oct	20	Properties of Cardiac Muscle; Cardiac Pacemaker	Ch 8.6, 9.2 (311-313)	Miksicek	7*
18-Oct	21	Cardiac Conduction System & Cardiac Electrophysiology	Ch 9.2 (313-322)	Miksicek	
21-Oct	21	**EXAM 2 (Nervous System): Covers Lectures 10-18**			
23-Oct	22	ECG and Excitation-Contraction Coupling	Ch 9.2; Suppl Slides	Miksicek	8
25-Oct	23	The Cardiac Cycle and Cardiac Contractility	Ch 9.3	Miksicek	
28-Oct	24	Autonomic Control of the Heart	Ch 7.1 & 9.4	Miksicek	
30-Oct	25	Overview of the Vascular System & the Flow Equation	Ch 10.1 and pg 344	Miksicek	
UNIT ON VASCULAR SYSTEM: LECTURES 26 - 31					
1-Nov	26	Vascular System: Arteries and Veins	Ch 10.2, 10.3 & 10.5	Miksicek	9
4-Nov		**EXAM 3 (Cardiac System): Covers Lectures 19-25**			
6-Nov	27	Reulation. of Peripheral Resistance - Extrinsic Control	Ch 10.3; Suppl Slides	Miksicek	
8-Nov	28	Control of Blood Pressure; Baroreceptors	Ch 10.6	Miksicek	10*
11-Nov	29	Capillaries, Veins, and Lymphatics; Starling Forces	Ch 10.4, 10.5	Miksicek	
13-Nov	30	Internal and External Respiration; Gas Transport	Ch 11.1 and Pg 457	Miksicek	11
15-Nov	31	Oxygen Transport and the Hb Saturation Curve	Ch 13.4 (484-488)	Miksicek	
UNIT ON REPSIRATORY SYSTEM: LECTURES 32 - 38					
18-Nov	32	Anatomy of the Respiratory Tree	Ch 13.1	Miksicek	
20-Nov	33	Lung Mecahnics and the Respiratory Cycle	Ch 13.2: 461-470		12
22-Nov	34	Expanding & Collapsing Forces; Lung Spirometry	Ch 13.2: 470-473		
25-Nov		**EXAM 4 (Vascular System): Covers Lectures 26 - 31**			

27-Nov	35	Inefficiencies of Breathing	Ch 13.2: 473-479	Miksicek	No Rec
29-Nov		Thanksgiving Break - NO CLASS			
2-Dec	36	Alveolar Ventrilation and Pulmonary Perfusion	Suppl Slides	Miksicek	13
4-Dec	37	Control of Respiration, Chemoreceptors	Ch 13.5	Miksicek	
6-Dec	38	CO2 and Bicarbonate Transport, Resp. Acid-Base Balance	488-491; 563-570	Miksicek	
11-Dec		**FINAL EXAM, 5:45 - 7:45 PM: Covers Lectures 32 - 38 + Cumulative**			