



College of Natural Science MICHIGAN STATE UNIVERSITY

PSL 450 (Sec 001 and Sec 002): Physiology in Health and Disease (3 Cr)

Course Website: <https://d2l.msu.edu/d2l/home/1483605>
Delivery Mode: Hybrid (online asynchronous on D2L and in-person)
In-person Meeting Time: Section 001 Tuesdays 2:40-4:00 PM
Section 002 Thursdays from 2:40-4:00 PM
In-person meeting location: Engineering Building 1145

1. COURSE OVERVIEW AND DESCRIPTION:

Fundamental principles of physiology provide the foundation for understanding pathophysiology in clinical medicine. You were introduced to foundational knowledge in physiology in PSL431 and PSL431. In this course, you will be exposed to physiology in health and disease. We will focus on 5 clinically significant disease topics. Our goal will be to cover a limited number of topics in depth, contrasting important differences in physiological states between health and disease.

For each topic, instructors will provide 2 online recorded lectures on the pathophysiology of the specific disease. Following each lecture, students will be expected to read and comprehend a research article that is related to the lecture. Students will then meet in-person and work as teams to discuss the research paper and work on answering questions related to specific figures (see further instructions on Research Box). Thus, students will read one research article per week throughout the semester.

Through a semester of weekly practice, students will learn how to read and comprehend scientific information related to physiological systems, health, and disease. In addition, they will be introduced to experimental models that help clarify underlying mechanistic basis of disease.

Student grades will be based on weekly D2L quizzes, answers to questions in Research Box (in-class teamwork), team project development (see later) and a final exam.

By participating in online recorded lectures, class activities and completing assigned projects, students will be able to do the following:

1. Recall content knowledge in the different disease areas (Quizzes)

2. Apply quantitative thinking and critical reasoning to answer questions in different disease areas (Quizzes, Research box)
3. Explain experimental design and data interpretation (Research Box, Team project)
4. Interpret data presented in graphical, tabular, and micrograph form (Research box, Team project, Final exam)
5. Compare, contrast, and make inferences from published research studies (Research box, Team project)
6. Create pictorial models that illustrate experimental design, the current understanding of disease mechanisms, or advances in disease treatments (Research box, Team project)

2. COURSE PREREQUISITES:

PSL 431 and PSL 432 and Completion of Tier I Writing Requirement; Enrollment Restricted to PSL Majors with NatSci and Lyman Briggs College

3. REQUIRED TEXTBOOK AND OTHER COURSE MATERIALS:

There will be no required textbook for this class. However, the Desire2Learn (D2L) course website will be a crucial course resource. Online lectures, corresponding lecture slides, and research papers will be posted to the D2L website. Students should be prepared to access lecture material from each of the following file formats: MS Word (.doc or .docx), MS PowerPoint (.ppt or .pptx), and Adobe Reader (.pdf). Navigate to the D2L Course Website and click on: FS21-PSL-450-ALL SECTIONS - Physiology in Health and Disease

4. FALL 2020 MSU HOLIDAYS AND IMPORTANT COURSE DATES:

Fall Classes Begin:	Thursday Sept 2
University Closed:	Monday Sept 6 (Labor Day Holiday)
University Closed:	Thursday Nov 25 – Friday Nov 26 (Thanksgiving Holiday)
Fall Classes End:	Friday Dec 10
FINAL EXAM:	Dec 15 @10 AM (both sections)

5. INSTRUCTORS, TOPICS, AND CONTACT INFORMATION:

Course Coordinators: Lori Seischab, Ph.D (she/her) and Nara Parameswaran, Ph.D. (he/him)

For general course related issues contact the Course Coordinators by email at psl450@msu.edu.

Co-instructors (for individual section related questions including office hours, email respective instructors directly):

- Karl Olson, Ph.D. (he/him): Metabolic Diseases. Email: olsonla@msu.edu
- Jason Bazil, Ph.D. (he/him): Heart Failure. Email: jnbazil@msu.edu
- Shane Crandall, Ph.D. (he/him): Epilepsy. Email: cranda86@msu.edu
- Rupali Das, Ph.D. (she/her): Anti-tumor immune response. Email: dasrupal@msu.edu
- Nara Parameswaran, Ph.D. (he/him): Inflammatory diseases. Email: narap@msu.edu

Assistant Instructor (i.e, Teaching assistant):

Gokul Murali, B.S. (he/him; muraligo@msu.edu). Contact person for issues related to technical aspects of D2L, google docs etc. Assistant instructor will also be in class along with the instructor to answer questions during in-person class. In addition, the Assistant Instructor will help instructors grade Research Box and Project.

6. CLASS ATTENDANCE AND PARTICIPATION:

Regular attendance for in-person class is expected. Because in-person class is primarily teamwork and discussion, it will not be recorded. Students with an unexcused absence for the day will receive a 0. Students with an excused absence will not receive a grade for that week. For excused absence, students are expected to email the coordinators at psl450@msu.edu prior to the class with proper documentation for the absence.

7. REQUIRED TECHNOLOGIES:

- The course requires access to high-speed internet, which would enable you to watch the lecture videos.
- Lecture materials (online lecture video, papers for Research Box discussion) and quiz will be posted to D2L. Please check to make sure you are using a D2L compatible browser here:
https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm

8. COURSE PLATFORM:

This course will be delivered in a hybrid format. You will need your MSU NetID to login to the course from the *D2L homepage* (<http://d2l.msu.edu>). In *D2L*, you will access lecture videos, lecture assignments, quiz, papers for discussion etc. You will submit all assignments via D2L. Each section will meet in person once per week (section 001 on Tuesdays and section 002 on Thursdays) to work on the Research Box in class.

9. TECHNICAL ASSISTANCE:

If you need technical assistance at any time during the course or to report a problem, you can:

- 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

10. COURSE POLICIES

10A. Learning Continuity Statement:

If you become unable to attend class for an extended time due to COVID-19 related circumstances:

- You are expected to e-mail the coordinators (psl450@msu.edu) as soon as you are able.

- In most cases, the regular course policies related to grading will apply.
- In extraordinary cases, we will work with the student to devise a reasonable pathway for successfully completing the course.

10B. Course continuity statement:

If any specific instructor becomes unable to run the course for an extended time, students will receive an e-mail from the coordinators regarding any changes to the course.

10C. Intellectual property policy:

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

1. 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.
2. Any student violating the conditions described above may face academic disciplinary sanctions.

10D. Course accommodations:

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. For an appointment with a disability specialist, call 884-7273 (voice), 355-1293 (TTY), or visit the [MSU RCPD Website](#) by clicking on this link. Such students should identify themselves to Drs. Seischab and Parameswaran (psl450@msu.edu) during the first two weeks of the course and provide a "Visa" issued by the RCPD office. Requests received after this date will be honored whenever possible. The coordinators will also be responsible for the Alternative Testing Site Authorization forms. Note that arranging for alternative testing at the time of each exam is the responsibility of the student and is done at the RCPD office in Rm 120 Bessey Hall.

10E. 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.

MSU is committed to creating and maintaining an inclusive community in which students, faculty, and staff can work together in an atmosphere free from all forms of discrimination. The Office of Institutional Equity (OIE) reviews concerns related to discrimination and harassment based on sex, gender, gender identity, race, national origin, religion, disability status, and any other protected categories under the [University Anti-Discrimination Policy](#) and [Policy on](#)

[Relationship Violence and Sexual Misconduct](#)). If you experience or witness acts of bias, discrimination, or harassment, please report these to the Office of Institutional Equity (OIE) website: <http://oie.msu.edu/>.

During all course activities, let us all strive to:

- Remain open. Ask yourself, am I being judgmental? Have I stopped listening?
- Be mindful of intent and impact. Ask yourself, did they intend to hurt me? Was the impact of my words hurtful?

All skills can be practiced, and with practice we improve. Let us dedicate this semester to intentionally practicing inclusion skills.

11. GRADING POLICY

11A. Grade Dissemination:

The grades for different sections will be posted in the D2L Gradebook.

11B. Graded Course Activities:

This course will be graded based on 500 points, as detailed below:

Course element	Description	Points Available	Percentage
Research Box**	10 classes (20 points/class)	200	40%
D2L quizzes	10 quizzes (10 points/quiz)	100	20%
Project development and presentation**	Project progress on Google slides	15	3%
	Final Google slide submission	70	14%
	Final Oral Presentation	15	3%
Final Exam	Data skills test	100	20%
Total Points		500	100%

**For specific and detailed information on Research box and Project development go to the respective documents provided separately.

D2L quizzes

D2L quizzes will assess your understanding of material covered in the online lecture. There are no make-up quizzes. These quizzes will be available for ~1 week for the students to take. If you miss the quiz due to a serious health issue (or such reasons) contact the coordinators with documentation. Others who miss a quiz will receive a 0.

Final exam

The final exam will require you to analyze and interpret experimental data similar to the ones discussed throughout the semester in the 5 different sections. Students with a legitimate emergency, such as illness, will be permitted to take a make-up final exam if written

documentation is provided confirming the problem. Such documentation *must* be provided by a physician or other disinterested party. For example, documentation from Olin Health Center must include a "recommendation for excused absence" on the "Patient Instruction Sheet." Such documentation, in whatever form, must be submitted to Drs. Seischab and Parameswaran (Course Coordinators: email psl450@msu.edu) 24 Hrs before the make-up is given. If possible, notification *prior* to missing the exam is highly desirable. Arrangements to schedule a make-up exam should be negotiated with the coordinators as soon as possible, preferably within 24 hours of the missed exam.

NO QUESTIONS ON CONTENT WILL BE ANSWERED DURING EXAMS, as any communication that occurs during an exam is inappropriate and may unfairly advantage some students over others. Exams will be scored within D2L and reported to the D2L course grade book. Scoring errors and/or student appeals to re-evaluate individual questions must be submitted to the course coordinators within 48 hours of the time exam results are distributed. To receive consideration, such appeals must be submitted in writing (e.g., by e-mail to psl450@msu.edu) and should include justification for why an alternate answer deserves to receive credit. You CANNOT appeal a question that you failed to answer.

11C. Grading Policy:

This course will be graded based on 500 points as noted above. There are no other provisions for extra credit, or hardship points. Students with point totals representing 90%, 80%, 70%, and 60% of the available points are assured of receiving minimum grades of at least 4.0, 3.0, 2.0, and 1.0, respectively. Final grades (4.0, 3.5 etc.) will be determined by the percentage of points earned out of the 500 possible points. Course faculty reserve decision on the minimum score for each grade, and particularly on how to apportion the grades among the lower quartile of the class. Petitions to re-evaluate a course grade will be considered in writing only (e.g. by e-mail) and must be submitted to Drs. Seischab and Parameswaran (psl450@msu.edu) within one week after the beginning of the semester following completion of the course, according to university guidelines.

11D. Final Grade Assignment (PROVISIONAL GRADING SCALE):

The table below describes the relationships between final grades** and cumulative points.

Final Grade	Cumulative Points	Percentage
4.0	450 to 500	90% to 100%
3.5	425 to 449.5	85% to 89.9%
3.0	400 to 424.5	80% to 84.9%
2.5	375 to 399.5	75% to 79.9%
2.0	350 to 374.5	70% to 74.9%
1.5	325 to 349.5	65% to 69.9%
1.0	300 to 324.5	60% to 64.9%
0.0	Below 300	Below 60%

*** Course faculty reserve the right to relax the final grade cut-offs depending on the resulting distribution of student scores, however the cut-offs will not be raised compared to the table shown above.*

11E. Grade Dissemination:

All scores will be posted in D2L. Final course grades will be reported through the Office of the Registrar. Email the coordinators (psl450@msu.edu) if you wish to discuss your performance in the course or your grade in general. If you wish to discuss content-related questions you should contact the instructor who presented the relevant content.

12. ACADEMIC HONESTY:

Article 2.3.3 of the Academic Freedom Report states that "The student shares with the faculty the responsibility for maintaining the integrity of scholarship, grades, and professional standards." In addition, the Department of Physiology adheres to the policies on academic honesty as specified in General Student Regulations 1.0, Protection of Scholarship and Grades; the all-University Policy on Integrity of Scholarship and Grades; the MSU Student Honor Code; and Ordinance 17.00, Examinations. Therefore, you are expected to complete all exams as an individual effort, without assistance from any other individual whether they are enrolled in the course or not. Students who violate this exam policy or other MSU rules may receive a penalty grade, including - but not limited to - a failing grade on the assignment or in the course. Contact your instructor if you have any questions about this policy. (Click here for a link to the [Ombudsperson's resources](#) on academic integrity and/or [Spartan Life: Student Handbook and Resource Guide](#)).

Violations of academic integrity include:

- Plagiarism of any kind
 - Submitting the work or another and falsely misrepresenting it as your own
 - Collaboration or communication with another individual during an examination, using social media, text, phone, or any other electronic means
 - Witnessing and failing to report a violation of academic integrity
- Commercialization of lecture notes or other university-provided course materials

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."

13. COURSE AND INSTRUCTOR EVALUATIONS:

The Department of Physiology participates in the SIRS Online system for all its undergraduate courses, including PSL 450. Students are encouraged to submit their opinions of the course and individual instructors at the end of each semester through SIRS Online by clicking on the [SIRS link](#). Students will be required to complete the SIRS Online form or to indicate within the form that they decline to participate. Otherwise, final grades may be sequestered for several days following the deadline for submission of course grades. Student anonymity is carefully protected, and students have the option of “opting out” of the course evaluation survey.

14. GRIEF ABSENCE:

In the event of loss of a family member or similar tragedy, students are directed to the university policy on Grief Absence that can be found at the [Spartan Life Online website](#).

15. 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](#).

16. POLICIES FOR STUDENT ATHLETES:

MSU policies pertaining to student athletes may be found by clicking on this link: [Student Athletes](#)

17. MANDATORY REPORTING POLICY:

As professors, one of our responsibilities is to help create a safe learning environment for our students and for the campus as a whole. As members of the university community, we have the responsibility to report any instances of sexual harassment, sexual violence and/or other forms of prohibited discrimination. If you would rather share information confidentially about sexual harassment, sexual violence or discrimination to an employee who does not have this reporting responsibility, you can find a list of those individuals here <https://caps.msu.edu/>

18. FACE COVERINGS/MASKS

Individuals with COVID-19 are highly infectious for up to two days before the onset of symptoms. Thus, face coverings are a crucial public health measure and help protect others by reducing exposure to droplets if someone is unknowingly infected with COVID-19. Wearing a face covering, whether [or not] you feel ill or have been diagnosed with COVID-19, is critical to maintaining everyone’s health and safety.

[Face coverings must be worn by everyone indoors (including all faculty, staff, students, vendors and visitors) while you are on property owned or governed by MSU or while participating in MSU-related or MSU-sponsored activities. If you have a medical condition that may prevent you from safely wearing a face covering, you should contact [MSU’s Resource Center for Persons with Disabilities](#) to begin the

accommodation process. From the APUE (8/20), individuals “must receive documents attesting to their exemption from the mask mandate before entering an MSU building without a mask.”

Students should “refrain from eating or drinking during class to avoid having to remove their masks. If they do consume food or drinks inside, they should remove the mask only to take a sip of beverage or a bite to eat, and they must replace the mask properly between each bite and sip.” (from the APUE (8/20/21))

Face coverings should:

- 1. be non-medical grade to maintain supplies for health care use,*
- 2. fit snugly against the side of your face,*
- 3. cover your nose and mouth,*
- 4. be secured with ties or ear loops, **and***
- 5. allow for breathing without restriction.*

Cloth face coverings should only be worn for one day at a time, and they must be properly hand washed or laundered with soap/detergent before subsequent use. Face coverings may vary (for example, disposable non-medical masks are acceptable).

If you refuse to wear a mask even after being asked, you will be asked to leave the classroom for disruptive behavior. *Non-compliance with the mask requirement [causing] disruption in the classroom will result in the initiation of disciplinary action, which could lead to removal from the university.*

19. DO NOT COME TO CLASS IF EXPERIENCING COVID SYMPTOMS!

Exposure

The best way to prevent illness is to avoid being exposed to the virus. If you believe you have been exposed to someone with COVID-19, you should self-quarantine and monitor your symptoms. If feeling ill, students should contact MSU's COVID-19 hotline at 855-958-2678 or contact their health care provider. MSU will test any faculty, staff, or student who becomes symptomatic after returning to campus. You may also get tested through the State of Michigan Coronavirus Testing Hotline. Call (888) 535-6136 from 8 a.m. to 5 p.m., Monday through Friday, and press 1 to be connected to an operator who can help you find a nearby location and schedule an appointment. Or, visit Michigan.gov/CoronavirusTest to find locations near you. There are many locations where you can get tested at no cost.

Positive Test for COVID-19

“Anyone diagnosed with COVID-19 should isolate from others for at least 10 days after symptoms first appear and for 24 hours after fever has subsided without the use of fever-reducing medications and other related symptoms are improving. If you tested positive for COVID-19 but showed no symptoms, you should isolate for 10 days after your positive COVID-19 test.” (from the APUE, 8/20/21)

Adherence to Public Health Guidance and Cooperation with Public Health Authorities

For the protection of the entire community, MSU expects all faculty, staff, and students to follow all applicable state and public health guidance and cooperate with public health authorities, including, but not limited to, participating in contact tracing efforts.

Adherence to Signage and Instructions

To protect yourself and others, faculty, staff, and students must (a) look for instructional signs posted by MSU or public health authorities, (b) observe instructions from MSU or public health authorities that are emailed to your “msu.edu” account, and (c) follow those instructions.

Calendars for Online lecture, Quiz, In-person meetings, and Project progress:

Calendar for Section 001 (Tuesday)

Class #	Topic	Online lecture & Quiz due date (Tues at noon)	In-person class & Research Box date (Tuesday)	Instructor
1	Intro and Research Box	N/A	Sept 7, 2021	Parameswaran/Seischab
2	Metabolic disease 1	Sept 14, 2021	Sept 14, 2021	Olson
3	Metabolic disease 2	Sept 21, 2021	Sept 21, 2021	Olson
4	Heart failure 1	Sept 28, 2021	Sept 28, 2021	Bazil
5	Heart failure 2	Oct 5, 2021	Oct 5, 2021	Bazil
6	Epilepsy 1	Oct 12, 2021	Oct 12, 2021	Crandall
7	Epilepsy 2	Oct 19, 2021	Oct 19, 2021	Crandall
No class - Break			Oct 26, 2021	
8	Anti-tumor immune response 1	Nov 2, 2021	Nov 2, 2021	Das
9	Anti-tumor immune response 2	Nov 9, 2021	Nov 9, 2021	Das
10	Inflammatory diseases 1	Nov 16, 2021	Nov 16, 2021	Parameswaran
No class - Break			Nov 23, 2021	
11	Inflammatory diseases 2	Nov 30, 2021	Nov 30, 2021	Parameswaran

Class #	Activity	In-person date	Instructor
12	Project presentations	Dec 7, 2021	Parameswaran/Seischab
13	FINAL EXAM in person	Wednesday Dec 15 at 10 AM	Parameswaran/Seischab

Due dates for project progress assignments

Due Dates (Mon at Noon)	Poster checkpoints: One team member should submit the required document	Feedback: Each team member should submit feedback
Sept 20	Selection of broad topic	
Oct 4	Selection of specific topic and Task Agreement Form	
Oct 11	Draft of Physiology section of poster	
Oct 18	Draft of Pathophysiology section, with diagram	Rubric for Physiology
Wed Oct 27	Draft of Study 1 section of poster	Rubric for Pathophysiology
Nov 1	Draft of Study 2 section of poster	Rubric for Study 1
Nov 8	Draft of Study 3 section of poster	Rubric for Study 2
Nov 15	Draft of Advances section of poster, with model	Rubric for Study 3
Nov 22	Draft of Conclusions	Rubric for Advances
Nov 29		Rubric for Conclusions

Calendar for Section 002 (Thursday)

Class #	Topic	Online lecture & Quiz due date (Tues at noon)	In-person class & Research Box date (Thursday)	Instructor
1	Intro and Research Box	N/A	Sept 2, 2021	Parameswaran/ Seischab
No class - Break			Sept 9, 2021	
2	Metabolic disease 1	Sept 14, 2021	Sept 16, 2021	Olson
3	Metabolic disease 2	Sept 21, 2021	Sept 23, 2021	Olson
4	Heart failure 1	Sept 28, 2021	Sept 30, 2021	Bazil
5	Heart failure 2	Oct 5, 2021	Oct 7, 2021	Bazil
6	Epilepsy 1	Oct 12, 2021	Oct 14, 2021	Crandall
7	Epilepsy 2	Oct 19, 2021	Oct 21, 2021	Crandall
No class - Break			Oct 28, 2021	
8	Anti-tumor immune response 1	Nov 2, 2021	Nov 4, 2021	Das
9	Anti-tumor immune response 2	Nov 9, 2021	Nov 11, 2021	Das
10	Inflammatory diseases 1	Nov 16, 2021	Nov 18, 2021	Parameswaran
No class - Break			Nov 25, 2021	
11	Inflammatory diseases 2	Nov 30, 2021	Dec 2, 2021	Parameswaran

Class #	Activity	In-person date	Instructor
12	Project presentations	Dec 9, 2021	Parameswaran/ Seischab
13	FINAL EXAM in person	Wednesday Dec 15 at 10 AM	Parameswaran/ Seischab

Due dates for project progress assignments

Due Dates (Mon at Noon)	Poster checkpoints: <u>One team member</u> should submit the required document	Feedback: <u>Each team member</u> should submit feedback
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Oct 4	Selection of specific topic and Task Agreement Form	
Oct 11	Draft of Physiology section of poster	
Oct 18	Draft of Pathophysiology section, with diagram	Rubric for Physiology
Wed Oct 27	Draft of Study 1 section of poster	Rubric for Pathophysiology
Nov 1	Draft of Study 2 section of poster	Rubric for Study 1
Nov 8	Draft of Study 3 section of poster	Rubric for Study 2
Nov 15	Draft of Advances section of poster, with model	Rubric for Study 3
Nov 22	Draft of Conclusions	Rubric for Advances
Nov 29		Rubric for Conclusions