Physiology Laboratory for Pre-Health Professionals (PSL 311L)

Michigan State University: Department of Physiology

Spring Semester, 2017

Rm 139 Natural Sciences Building

Section 001: M 10:20-1:10 pm

Section 002: T 3:00-5:50 pm

Section 003: W 10:20-1:10 pm

Section 004: Th 3:00-5:50 pm

Course Description:

This Laboratory course is designed to be taken either concurrently or in sequence of PSL 310 Human Physiology for Pre-Health Professionals. Students will perform weekly experiments on various aspects of human body function and potentially animal model were appropriate. The following laboratory exercises in physiology will include cardiovascular and respiratory function, nerve and muscle function, reflexes, endocrine, renal, digestive and metabolism with a focus on key concepts of homeostasis as they relate to health professionals. Weekly exercises/assignments will include readings, develop an awareness and adherence to standardized laboratory protocols for data collection and clinical analysis, and form clinical correlates respecting relevant physiological principles as applied to various integrated body systems. **(2 Credits/ 3 in class hours a week).**

Prerequisites/Corequisites:

In order to participate in this course, the student must have successfully passed PSL 310 or PSL 432 or concurrently enrolled in either of these courses. Prerequisites may apply to these courses as well. It is also understood that the successful student will have had some background in Chemistry and Biology to be able to analyze complex physiological processes at the 300 level. Students having taken PSL 250 are not eligible to take this course unless a specific override is granted upon completion of conditional courses set forth by the Department of Physiology and Instructor of record. Check with your advisor if you are not sure.

Course Objectives and Learning Outcomes:.

By the completion of this course, the successful student will be able to;

1. Demonstrate in depth the concepts and mechanisms required to maintain homeostasis using various clinically relevant laboratory procedures.
2. Execute various clinical measurements and assess how these measurements indicate normal system physiology as well as changes with disease.
3. Prepare and analyze physiological data in table and graphical format and be able to discuss with their peers, associations between physiological principles and clinically relevant data.

4. Show safe and appropriate use of laboratory equipment such as microscopes, physiology data acquisition systems and virtual simulations.
5. Prepare and operate carefully and appropriately all medical equipment including sphygmomanometer, stethoscope, spirometer, glucometer, Clinistix®, EKG, EMG as well as Cholestech LDX®.
6. Be able to work collectively as well as individually when synthesizing, integrating, and summarizing data while making judgements for predictive purposes.
7. Observe and give examples of physiological principles applied within a relevant professional healthcare setting.
8. Discuss and support professional growth characteristics within a laboratory environment that are also essential to becoming a successful future healthcare provider.

Instructor Information:

John Zubek, PT, MS, DPT (Michigan Licensed Physical Therapist)
Assistant Professor of Physiology
Office: 3177 Biomedical and Physical Science Building
Office Phone: 517-884-5117
Email: zubekjoh@msu.edu (preferred correspondence) Please include your section # in subject line.
Office Hours: Monday's 2:00-3:30pm (Nat Sci Rm 139), W 2:00-3:30pm (Nat Sci Rm 139)
Other days in BPS Rm 3177 by appointment please.

Graduate Assistant

Ho Jun Kang, MS. Candidate
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Office hours: TBD and by appointment

Graduate Assistant

Jackie Fenn MD/Ph.D. Candidate
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Email: fennjacq@msu.edu
Office hours: TBD and by appointment

Lab Manager/Assistant Instructor:

Valerie VanRyn, BS Physiology
Office: 2199 Biomedical Physical Sciences Building
Email: vanrynva@psl.msu.edu

Important Note!

If you should make an appointment to meet with the Instructor, TA, LA or Lab Instructor and do not show for your appointment without valid excuse, you will only be allowed to use open office hours in the future. Our Laboratory Students, Staff and Faculty are very busy and have a number of duties each day as part of their academic assignments. While we are happy to assist you in any way we can with your learning, please also respect our time constraints.

Assignments and Grading (assignments will be further discussed in detail below)

13 quizzes (10 points each. I drop the lowest 1)	120 pts total
14 weekly laboratory assignments (75 pts each)	1050 pts total
1 Professional Observation Project (80 pts)	80 pts total
1 Professionalism/Self Assessment (50 pts)	50 pts total
1 Final Exam (200 pts written)	200 pts total
Total points	= 1500 pts

Grading Scale (Note: final grades will be calculated based in POINT totals. I do not round up).

4.0	90%	1350-1500 pts
3.5	85%	1275-1349 pts
3.0	80%	1200-1274 pts
2.5	75%	1125-1199 pts
2.0	70%	1050-1124 pts
1.5	65%	975 – 1049 pts
1.0	60%	900 – 974 pts
0	<60%	899 pts or less

Lab protocols and procedures

All documents for this course will be provided through access to D2L/Lt (our cloud based software) and registration in PSL 311L. You will be required to go through ALL pre-lab lectures and outside readings PRIOR to your laboratory session (up to 1-1.5 hours). Readings will include the PSL 311L tutorials, selected research articles, course notes, lectures and handouts. You may be required to **print** some procedures and data sheets to **bring with you** to lab. Therefore, any printouts requiring special handling will be specified in D2L ahead of time.

Required materials

Lt access cards will be required purchase after the first week of class, but no later than **January 29th**. You will be given a 3-week grace period initially. After that, you will not have access to the course modules without purchasing an access card. These access cards will ONLY be available at **MSU Computer Store** at a cost of $59.95 each. You will be notified when they are available to purchase. No other course materials are required at this time.

Attendance (Please use D2L absence application module to send notice of absence)

Due to the nature of the laboratory learning environment, it is **mandatory** that you attend EVERY lab session. If for some reason you cannot make your scheduled laboratory session, you MUST give 24-hour advanced notice with proper documentation, and file an "**Application for makeup lab"** on D2L to make arrangements with your **Teaching Assistant**. Only approved excuses will be granted any make ups. If arrangements have been made to attend another lab session (pending space is available), the lab MUST be made up within the same week. (see below for approved excuses). You cannot be granted more than 2 lab absences in a semester to pass the course.

Excuses that will require approval for lab/assignment makeups (*Documentation will be required).

1. Severe acute illness or injury*
2. Death in Immediate family* (see below)
3. Student athletes* (required events)
4. Medical or Graduate school interview* (1 granted per semester).
5. Professional conference presentations* (1 granted per semester).
6. Observation of religious Holidays

Things happen, computers crash, printers run out of ink, relationships break, weather stinks, other class assignments pop up, alarms don't always work, birthdays come every year, travel is fun but not on lab days. Please try to plan ahead as these are not acceptable excuses for missing labs or assignments.

Grief Absence Policy:

http://splife.studentlife.msu.edu/regulations/student-group-regulations-administrative-rulings-all-university-policies-and-selected-ordinances/grief-absence-policy

The goal of this policy is to provide a mechanism to standardize, monitor, and accommodate students who request temporary absence from a course, or special accommodations for a quiz or an exam as a result of loss or serious injury of a family member (parent, grandparent, sibling, spouse, or child). **Students are directed to notify the Assoc Dean of their college and document the reason for the grief absence, and the Assoc Dean in turn is charged with notifying the student's instructors that the bereavement event has been verified.** Ultimately, it is the student's responsibility to make up any missed work.

Quizzes (120pts total)

We will have a total of 13 quizzes (I will only count 12 though) to be administered at the start of lab session. If you are late (more than 5 minutes) or come unprepared (not completed the pre-lab module in Lt), you will not be allowed to take the quiz. Quizzes can be any of the following formats including; verbal, written, audience response systems, through D2L or group. If you are late but within the 5-minute window, you will NOT be given more time for the quiz. You will only get the time that is remaining. Bottom line is **Please** don't be late! No makeup of quizzes will be granted for any reason.

Lab Assignments (14x75 pts each = 1050pts total)

Each week you will complete a laboratory exercise/assignment either individually or in small groups. They will often be in case study or clinical format as if you were performing many of the assessments on your patient/client. So acting professional is very important in these situations and will be taken into account for points each week. Each assignment must be submitted through a designated Digital Dropbox on D2L **the same day** as your scheduled lab session. Therefore, time management will be critical in lab. No assignments will be accepted in hard copy. Any late lab assignments will be deducted as per the grading rubric point structure. Lab scores are based not only on **correctness** of answers which includes appropriate use of key terms, but also on completing all **Pre-lab** activities, **Completeness** of labs, **Teamwork** strategies, **Participation**, and **Time** management. Points can be deducted from individual scores within any of the above categories. No lab assignments will be accepted > 1 week from **due** date unless there were extenuating circumstances as approved by Instructor of record or TA. So that you may keep track of your current status in the course, all assignment grades will visible in D2L gradebook within 1 week of submission date. Any delay in posting of grades will be communicated to the students via email.

Professional Observation Project (80pts)

Many students have a hard time making the connection between important physiological concepts and how these concepts relate to knowledge in the clinical/professional world. Each student will be required to perform at least **4 hours** of *observation/interview* time with a healthcare professional of their choice. You will be asked to report on various clinical assessments, procedures, treatments and/or outcomes which relate to physiological concepts you are studying in your PSL 310 course and PSL 311L laboratory. Observation hours, answers to specific questions with write up, and signature of professional with credentials you are shadowing must be submitted. Instructions will follow in a separate document.

Professionalism/Self-Assessment (50pts)

As in all occupations, professionalism is imperative for a healthy working environment. Often in the Health Professions, how you are perceived by the patient or client can have economic rewards or penalties. This does not mean you can't have fun or joke with you patient/client, but how you treat them and display yourself is often as important to your employer as how good a clinician you are. We will be implementing an overall professionalism assessment in conjunction with your own self assessment this semester. You are being evaluated not only by yourself but also by your Instructors and your peers. Some assessment areas will include punctuality, teamwork, environment of care, hand hygiene, your demeanor towards our staff, and your level of preparation for labs.

Final Exam (200pts)

One final exam will be given during finals week (TBA as per the final exam schedule). This exam may further be broken into blocks of time and assigned based on your section. Since many of you will be going into various healthcare fields, you will be required to take qualifying exams at some point. Therefore, this final exam will encompass laboratory material/concepts, readings, and lectures from the **entire** semester. Will begin reviewing up to 2 weeks ahead and together with our fantastic TA's will offer some outside study and review sessions when available (TBA).

Participation in Lab Activities

It is very important to your learning that you participate to the fullest each laboratory session. You will be asked to take part not only in noninvasive methods of data collection but also involving small finger sticks for blood samples on each other. If you should have any reservation about participating in any of these collection methods, please see your Instructor to develop an alternative option to allow for full involvement as able. Some methods will also call for invasive procedures as performed by a professional on volunteers only. Techniques involving animal specimens (where appropriate) will require some skilled support from various learning assistants and student volunteers. You will **NOT** be required to participate in those procedures (without penalty) but you will nonetheless be required attend lab as a researcher/observer. Consequently, you are not relieved of any obligations for participating in data recording, quizzes, lab assignments, and discussion.

Confidentiality

You will be asked to collect and manage some sensitive data regarding yourself and your lab partners. In no way will this information be disseminated nor discussed outside of a laboratory context out of respect and confidentially for your lab colleagues. As in the "real" world, this would be a HIPAA violation. Here too this will be considered a "Breach of Confidentiality." Any first "breach" will be dealt without penalty but will require further education of the student at fault. A second "breach" will be dealt with more harshly at the Instructor's discretion from deduction of points up to and including dismissal from the laboratory.

Plagiarism

Plagiarism is ALWAYS UNACCEPTABLE and will result in action taken against you. Please refer to the following links for further information:
MSU policy on plagiarism: https://www.msu.edu/unit/ombud/academic-integrity/plagiarism-policy.html
MSU policy on academic dishonesty: http://splife.studentlife.msu.edu/regulations/student-group-regulations-administrative-rulings-all-university-policies-and-selected-ordinances/integrity-of-scholarship-and-grades

Accommodations for Persons 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. 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.

Student Responsibilities

1. **Be on time for and attend all Laboratory sessions.**
2. Read all assigned material and complete assignments before coming to Lab.
3. Retain copies (electronic and paper) of assignments/lab activities submitted during the semester till the end of the semester. Contests/disputes about scores received on assignments/activities will not be addressed without the original submission.
4. Set aside time daily to access the class D2L site and have a backup plan in event of computer malfunction.
5. **Respect the other students and instructor by refraining from disruptive behavior, including turning off all communication devices (cell phones, tablets, etc.) during class. Any disruptive or unsafe behavior witness you will be asked to leave class and no credit will be given for that day's assignments.**
6. Check e-mail and D2L for class related information including grades and inform the instructor of any discrepancies at the earliest.
7. Participate in all Lab activities with only prearranged exceptions as outlined above.
8. Know when you need help and ask for help.
9. You may not come late/leave early without proper communication and preapproval by the Instructor/TA/LA/ or Lab manager as points will be deducted up to no credit for that day's lab assignment.
10. Please refer to the following website for more specific Student Code of Conduct and judicial review.

Lab Safety

You are expected to follow ALL lab safety rules whenever you are in lab. Failure to follow these rules may result in your not being allowed to participate in lab.

1. No food or drink is allowed in lab.
2. No open-toed shoes are allowed in lab on Hematology Lab Day.

3. You must wear safety goggles when working with any bodily fluids or if splash or spray is anticipated.
4. You must wear gloves and possibly gowns when working with tissue specimens or body fluids.
5. Use equipment and any dissection utensils according to instruction only.
6. Do not handle any broken glass. Please alert TA's, Instructor, or Lab Manager.
7. Use aseptic technique when working with any specimens or microbes.
8. Wash your hands and clean work area thoroughly before lab and when leaving lab.

University Ombudsman

"The Office of the University Ombudsperson is available to assist students with any conflict or problem that has to do with being a student at Michigan State University. You may visit the Ombudsperson in 129 North Kedzie, call (517) 353-8830 or e-mail ombud@msu.edu. The Office of the University Ombudsperson is an independent, neutral, informal and confidential resource and does not accept formal complaints, nor does it provide notice to the University."

PSL 311L Laboratory Schedule Fall 2016

****Print this and post where you will see it****

Week of*	Topic	Assignment/ Readings
Week 1 1/9-1/12	Introduction to Powerlab/ Introduction to Laboratory Equipment	Introduction to Lt
Week 2 **1/16-1/19**	***No Labs This Week******	None
Week 3 1/23-1/26	Homeostasis/Membrane Transport/Osmosis	Membrane Transport Prelab**
Week 4 1/30-2/2	Membrane Potential/Nervous system	Peripheral NS Prelab** *(You must have your access card for this week's lab).*
Week 5 2/6-2/9	Sensory Physiology and Sensory Receptors	Sensory Physiology Prelab**
Week 6 2/13-2/16	Somatic and Autonomic Reflexes	Brain structure and reflexes Prelab**
Week 7 2/20-2/23	Skeletal / EMG	Muscle/EMG Prelab**
Week 8 2/27-3/2	Blood and Immunity	Blood and Immunity Prelab**
3/6-3/9	***Spring Break- No Labs***	None
Week 9 3/13-3/16	Cardiac Physiology and EKG	Heart and EKG Prelab **
Week 10 3/20-3/23	Blood Pressure/MABP	Blood Pressure Prelab**
Week 11 3/27-3/30	Respiratory	Mechanics of Breathing, Lung Volumes Prelab**
Week 12 4/3-4/6	Exercise/Fitness Lab	Fitness Prelab**
Week 13 4/10-4/13	Renal/Urinalysis	Kidney/Urine prelab and lab**
Week 14 4/17-4/20	Endocrine	Observation Project Due** Endocrine Prelab**
Week 15 4/24-4/27	Digestion/ Metabolism including Glucose Metabolism	Digestion tutorial, Glucose metabolism Prelab **
Week 16 **5/1-5/5**	**Final exam (TBA)** **Final exams Week**	Self-Assessment due**

*Week of indicates first day of the week.

**Indicates due at beginning of lab session. Prelab Modules must but completed prior to lab day/time.

*** Due to MLK Holiday, we will not be having ANY labs sessions this week (1/16-1/19).

Reasonable time on tasks each week

You should be willing/able to spend up to 1-1/2 hours of pre lab preparation, 3 hours in lab, and 1-2 hours of follow up on assignments each week. Be prepared to be in lab for the full 3 hours each week. There may be times we do not use the full 3 hours, but that is not always able to be predicted.