

BIPN 100

Human Physiology I

Summer 2025

Instructor: Mingyu Yang, Ph.D.
ymy@ucsd.edu
Lecture: T/Th 8:00am-10:50am
Center 119
Office hours: See Canvas homepage
Additional meetings by appointment

Introduction

Welcome!

Welcome to BIPN 100! As your professor, I care deeply about fostering a joyful, inclusive classroom climate. Our classroom should be a place where everyone is respected, feels safe to make mistakes, and lifts one another up. Meeting with students is my favorite part of the job, and I look forward to getting to know you all - you can reach me through email, drop-in office hours, or 1:1/small-group appointments. College is a time of tremendous growth, both inside and outside the classroom, and I'm excited to support and celebrate your growth this quarter!

Course description

The concepts of physiological regulation, controlled and integrated by the nervous and endocrine systems. Structure and function of the muscular, cardiovascular, and renal system, and their relationship with the nervous and endocrine systems.

Course learning objectives

1. Explain the structure and function of the nervous, endocrine, muscular, cardiovascular, and renal systems.
2. Compare and contrast the structure, function, and regulation of smooth, skeletal, and cardiac muscles.
3. Analyze the endocrine system, including the function of feedback loops, receptors, and different classes of hormones.
4. Describe the organization of the central and peripheral nervous systems.
5. Analyze how neurons communicate with each other and with other cells.
6. Analyze how the electrical activity of the heart impacts the mechanical events of the cardiac cycle.
7. Predict how regulator systems maintain blood flow dynamics and blood pressure.
8. Explain how and where filtration, secretion, and reabsorption of substances occur in the renal system.
9. Analyze the interactions and interdependence between physiological systems through the lens of homeostasis.

Resources

Optional textbook: "Physiology: An Integrated Approach" (Silverthorn).

Course components

Pre-Class Assignment (PCAs)

Before each class, you will complete a Pre-Class Assignment (PCA), which includes watching 5-6 short videos and completing some assessment problems about those videos. In total, we expect each PCA to take you around an hour, but there is no time limit, so you can take as long as you need. Some videos will review content from prerequisite courses, but most will introduce new ideas that we'll build upon during class. Since this will be your first exposure to the material, the assessment questions will be kept fairly simple by design; in contrast, exams will contain more challenging, application-based problems. For each PCA, you will receive three attempts, and we'll record your highest-scoring attempt. There will be seven PCAs in total, we will **drop your**

lowest-scoring PCA when calculating your final course grade. PCAs are due at 8:00am on T/Th, except on exam days, when there are no assignments due.

Class sessions

Class time will be a combination of lecture and individual/group problem solving. To participate in class polling, you'll need either a physical iClicker or an electronic device registered with iClicker Cloud. For every class in which you actively participate (responding to >75% iClicker questions), you will receive 2 course points, up to a maximum of 16 points. Clicker points are graded for participation and not accuracy. Everybody will receive participation credit for the first week of class.

Concept Checks

There will be an online Concept Check due most T/Th at 8:00am (in addition to the PCA also due on the same day). Whereas PCAs prepare you for the *upcoming* lecture, Concept Checks help you review material from the *previous* one. The specific content coverage of each Concept Check will be listed on the course calendar (see final page of the Syllabus). Some of the questions will be fairly simple to make sure you understood the basic ideas from class, and others will be more difficult exam-style questions. All Concept Checks are **open-book**, **open-collaboration**, and have no time limit – you can and should work together with your peers! You will only have one attempt per Concept Check, but at the end of the quarter we will **drop your lowest-scoring Concept Check** when calculating your final course grade.

Discussion sections

Every T/Th, we will release a **Problem Set**, containing several problems that are similar in style to exam questions. Since we'll release the answer key at the same time, the Problem Set is ungraded and purely to help you study. During discussion section, you'll work through the Problem Sets in small groups, supported by the instructional staff. Attendance at discussion is optional but highly recommended. You may attend any discussion section of your choice.

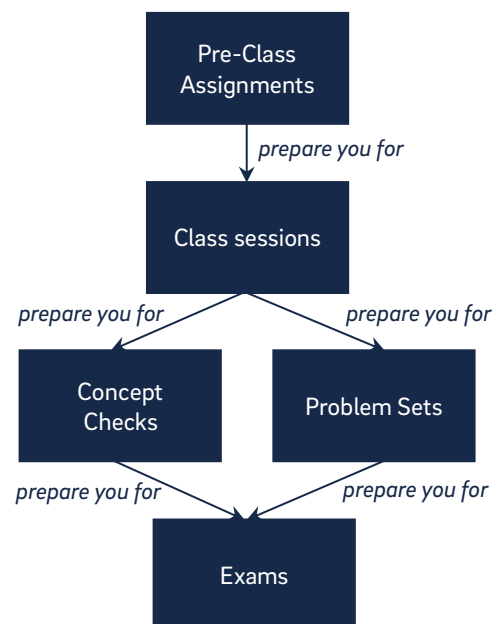
Exams

There will be two Midterm exams and a Final. The questions will be similar in difficulty to the Problem Sets, Concept Checks, and in-class questions, except that the exams are **in-person**, **closed-book** and **closed-collaboration**. Midterm 2 is non-cumulative and emphasizes new material covered since Midterm 1. The Final Exam will have two parts: Part A is non-cumulative and emphasizes new material since Midterm 2. Part B is fully cumulative and comprehensively covers the entire course. If your score on Part B of the Final Exam is higher than your lowest Midterm, your **score on Part B on the Final will replace your lowest Midterm**.

Because of this policy, we will not offer any make-up Midterms. This policy is also meant to accommodate for missing a Midterm due to illness – the last thing I want is for you to feel pressure to study while you're ill! Note that no part of the Final Exam itself can be replaced.

Office hours

Office hours are an opportunity to clarify course content and also to chat more broadly about anything you want. You do *not* need to come with any questions prepared; in fact, sitting and listening to everybody else's questions can often help to resurface questions that you didn't even realize you had. Most office hours will be held in a large conference room or a classroom, where you can pop in or out at any time. I will also hold additional 1:1/small-group office hours by reservation, which can be booked through our Canvas homepage. I especially encourage you to make an appointment if you feel like your performance in the class is being impacted by experiences outside of the classroom – I'm here as a resource to support you. Outside of synchronous office hours, you can also ask (and answer each other's) questions on the course **Piazza** forum, which is linked on Canvas.



Assessment and grading

The course is graded out of 480 points total. Your total score will be converted to a letter grade based on the following absolute scale. This class is **not curved**; therefore, you are not in competition with each other, and in theory everyone can earn an A grade. Grades will not be rounded; instead, I'll provide everyone a few opportunities for extra credit that *may* 'round you up' if you're close to a grade boundary. I request that you don't ask for additional grade bumps or extra credit opportunities beyond those that are already provided for the entire class – it wouldn't be equitable if I provide additional extra credit opportunities just to the students who ask for it.

A+ ≥ 466	A ≥ 446	A- ≥ 432
B+ ≥ 418	B ≥ 398	B- ≥ 384
C+ ≥ 370	C ≥ 350	C- ≥ 336
	D ≥ 288	
	F < 288	

Grade breakdown

Midterm 1		80
Midterm 2	(Emphasizes post-Midterm 1 material)	80
Final Part A	(Emphasizes post-Midterm 2 material)	80
Final Part B	(Comprehensive)	80
Concept Checks	(12 pts each, 7 total, drop 1)	72
Pre-Class Assignments	(12 pts each, 7 total, drop 1)	72
Class participation	(2 pts each, 10 total, drop 2)	16
Total		480

Final Exam grade replacement policies

The goals of the following policies are twofold: to (a) incentivize sustained effort throughout the quarter and (b) reward improvement on the Final. As such, there are two mechanisms for your Final Exam score to replace other components of your grade. These work independently of each other, i.e., you might end up taking advantage of one, both, or neither. These policies are intended as safety nets and should not replace your efforts to engage consistently with all components of the course.

1. If your **score on the Final Part B** is higher than your lowest Midterm score, then that Midterm score will be replaced by your score on Part B. Note that this only applies for one Midterm (not both), and that the Final itself cannot be replaced.
2. If your **total percentage score on Part B** is higher than your class participation score, then your participation score will be replaced by your percentage on Part B. For example, if your participation score is 8/16 (= 50%) and your Final Part B score is 60/80 (= 75%), then the participation score will be replaced with 12/16 (= 75%). That said, you should still make every effort to attend class, and treat class participation as 'free points' that can reduce the weight of the Final.

Course policies

Academic accommodations

If you need academic accommodations due to a disability, please send Ming a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (osd.ucsd.edu). We'll schedule accommodations for the Midterm and Final exams directly with the Triton Testing Center.

Late policy

We will not accept any late work in this class. This way, we'll be able to release answer keys for PCAs and Concept Checks immediately when they're due. The drop policies will help to buffer your grade if you miss a deadline.

Regrade policy

If you believe an exam question was graded incorrectly, you must submit a hardcopy regrade request to Ming before the last day of class. Your request should explain which question you'd like regraded and specifically why your answer was similar to the answer key. At the end of the quarter, I will first calculate your final grade *without* any regrades factored in; if the regrade has the potential to bump your score up to the next letter grade, I will process your regrade request. Your score may go up or down as a result of the regrade. (Many students typically receive an 'A' without needing the regrade!)

Academic integrity

By upholding high standards of integrity in this class, you can be confident that every student is fairly assigned the grade that they earned. This means you should never misrepresent somebody else's work as your own; for example, during class time, you should only click in for yourself and not your peers. In addition, although PCAs and Concept Checks are collaborative and open-resource (including artificial intelligence tools), your submission should ultimately represent your own effort. You should be able to defend all your answers, so please do not blindly copy from your peers or from the Internet. Getting into bad habits early on will prepare you poorly for exams, which are closed-book and closed-collaboration. Ultimately, we trust you to succeed with integrity, and we have no interest in policing your behavior. Please return our trust by behaving with honesty.

Anonymous feedback

The class Canvas page links to an anonymous feedback form that will be open throughout the quarter. Only Ming has access to this form, and there will be no way to trace the response back to you. We especially encourage you to complete the form if you had an experience that was demeaning, intimidating, offensive, or threatening in any way. If I said anything in class that came across this way, this is also a good place to tell me (although I welcome non-anonymous feedback too!). Remember, my email inbox and office hours are always open to you, if you want me to follow-up directly with you.

Extenuating circumstances

I sincerely believe that everyone can succeed in this class. However, extenuating circumstances may arise that negatively impact your ability to participate in the course (for example, needing to miss more classes than the drop policy accommodates for). If you find yourself needing additional accommodations or support, please reach out to your college's Dean of Student Life, and I will work together with both you and your Dean to plan a path forward. There are two reasons for this policy: (1) If you find yourself needing additional accommodations because of an extenuating circumstance, this is likely affecting your participation in all your classes, not just this one. Your Dean of Student Life can help coordinate with *all* your course instructors, so you won't have to figure it all out alone. (2) As your professor, I don't think it's right for me to be the arbiter or who does or does not 'deserve' additional accommodations – I think this responsibility should be for someone whose full-time job (and professional training) is in student support. I will commit to putting my best-faith effort to working with your Dean to ensure you receive the support and flexibility you need.

Parting remarks

The main goals of this course are for you to learn a lot, build a class community, and have a wonderful experience while doing so. Welcome to BIPN 100!

Schedule of topics

(subject to change)

Date	Classes	Assignments (due 8am)
Aug-05	01 Homeostasis and Feedback	
	02 Membrane Potentials	
	03 Graded Potentials	
Aug-07	04 Action Potentials	Concept Check 1: Classes 01-03 PCA 1: Classes 04-06
	05 Synaptic Transmission	
	06 Central Nervous System	
Aug-12	07 Sensory Systems	Concept Check 2: Classes 04-06 PCA 2: Classes 07-09
	08 Somatic Motor System	
	09 Skeletal Muscle	
Aug-14	10 Mechanics of Movement	Concept Check 3: Classes 07-09 PCA 3: Classes 10-13
	11 Autonomic Nervous System	
	12 Smooth Muscle	
Aug-19	Midterm 1: Classes 01-09	No assignments due.
	13 Hormone Release	
Aug-21	14 Hormone Effects	Concept Check 4: Classes 10-13 PCA 4: Classes 14-16
	15 Cardiac Muscle	
	16 Wiggers Diagram	
Aug-26	17 Electrocardiograms	Concept Check 5: 14-16 PCA 5: Classes 17-19
	18 Regulation of Cardiac Output	
	19 Pressure-Volume Loops	
Aug-28	20 Regulation of Blood Pressure	Concept Check 6: Classes 17-18 PCA 6: Classes 20-23
	21 Peripheral Circulation	
	22 Kidney Structure and Function	
Sep-02	Midterm 2: Classes 10-18	No assignments due.
	23 Reabsorption and Secretion	
Sep-04	24 Excretion and Clearance	Concept Check 7: Classes 19-23 PCA 7: Classes 24-26
	25 Regulation of Fluid Osmolarity	
	26 Integrative Control of Fluid Volume	
Sep-06	Final Exam: Comprehensive	