

COURSE SYLLABUS**Instructor:** Catalina Reyes, MSc., Ph.D**E-mail:** creyesgonzalez@ucsd.edu**Office hours:** Monday and Wednesday 9-10 AM and 11 AM - 12 PMZoom <https://ucsd.zoom.us/j/92051784289>**Instructional Assistants office hours:** The office hour schedule for IAs is posted on CANVAS.**IMPORTANT:** Please contact your Instructional Assistant (IA) for general inquiries. Make sure to include **BIPN 100** in the subject line. Due to the large number of students in the class we will **not** be able to answer individual questions about the content of the lectures by email. To get your questions answered please attend Catalina's office hours, IAs office hours or discussion sections.

For information on how to learn remotely you can access the following website

<https://digitalllearning.ucsd.edu/learners/learning-remote.html>**CANVAS site:** coursefinder.ucsd.edu

Pre-recorded lectures, lecture slides, Announcements, quizzes, and grades will be posted here.

Lectures: Pre-recorded lectures are posted in the Media Gallery folder on CANVAS. PDFs of the lecture slides are available in each week's page under the Module – Lectures on CANVAS.**Discussion sessions:** Discussion sections will take place at the scheduled times. You can attend **ANY** discussion section for that week. Attendance will not be taken.

Section A01 – Monday	10:00-10:50 AM	Yalila Vega	ygvega@ucsd.edu
Section A02 – Monday	7:00-7:50 PM	Iffah Aziz	niaziz@ucsd.edu
Section A03 – Monday	11:00-11:50 AM	Romona Dong	rxdong@ucsd.edu
Section A04 – Monday	12:00-12:50 PM	Sanjana Balagere	sbalager@ucsd.edu
Section A05 – Monday	2:00-2:50 PM	Likitha Aradhyula	laradhyu@ucsd.edu
Section A06 – Wednesday	10:00-10:50 AM	Julie Martinez	jum045@ucsd.edu
Section A07 – Wednesday	11:00-11:50 AM	James Bantugan	jfbantug@ucsd.edu
Section A08 – Wednesday	3:00-3:50 PM	Alexander Pile	apile@ucsd.edu
Section A09 – Wednesday	4:00-4:50 PM	Ameen Khan	ahk041@ucsd.edu
Section A10 – Monday	10:00-10:50 AM	Tiani Louis	tlouis@ucsd.edu
Section A11 – Wednesday	10:00-10:50 AM	Ameen Khan	ahk041@ucsd.edu
Section B01 – Monday	1:00-1:50 PM	Anthony Quach	a5quach@ucsd.edu
Section B02 – Monday	3:00-3:50 PM	Hanna Hovren	hhovren@ucsd.edu
Section B03 – Monday	4:00-4:50 PM	Layth Alghazi	lalghazi@ucsd.edu
Section B04 – Monday	5:00-5:50 PM	Vikram Padala	vpadala@ucsd.edu
Section B05 – Monday	6:00-6:50 PM	Minnie Luu	mpluu@ucsd.edu
Section B06 – Tuesday	9:00-9:50 AM	Jenny Lin	jel315@ucsd.edu

Section B07 – Tuesday	10:00-10:50 AM	Safa Algharbi	salgharb@ucsd.edu
Section B08 – Tuesday	11:00-11:50 AM	Min Woong Jin	mwjin@ucsd.edu
Section B09 – Tuesday	12:00-12:50 PM	Qiancheng Peng	q8peng@ucsd.edu
Section B10 – Monday	3:00-4:50 PM	Tiani Louis	tlouis@ucsd.edu
Section B11 – Tuesday	10:00-10:50 AM	Jenny Lin	jel315@ucsd.edu

OPTIONAL TEXTBOOK: Human Physiology, 8th edition by Dee Silverthorn. The 7th, 6th and 5th editions are fine.

IMPORTANT – the textbook is **NOT** mandatory. However, a digital inclusive version of the textbook will be provided by the UC San Diego Bookstore through the RedShelf tool on CANVAS. You have a two-week period to decide if you want to keep access or opt out. If you keep access you will be charged \$52 for perpetual access to the eBook.

Objectives for the course

1. Learn how different systems in the human body work together to maintain homeostasis
2. Learn the anatomy of the systems discussed in class
3. Learn anatomical, physiological, and biomedical terms
4. Learn how to read graphs and images
5. Ability to apply the knowledge acquired to solve physiological and medical problems

To succeed in this course, you must do the following:

1. Work hard. Go over the material every week.
2. Learn the terminology and concepts. There are two components important when learning physiology: memory and understanding. You will have to memorize anatomical and physiological terms, but to succeed you must understand the concepts and physiological processes and learn to critically think about physiology.
3. Read through the power point presentations before watching the pre-recorded lectures.
4. Take notes while listening to the pre-recorded lectures
5. Attend at least ONE Zoom discussion section per week.

Lectures

You must watch the pre-recorded lectures and take notes. Lecture slides and the Lecture recordings are posted on CANVAS. During the scheduled lecture times on Monday and Wednesday (9-9:50 AM AND 11-11:50 AM) I will hold office hours using Zoom. During Monday office hours, I will answer questions and review difficult concepts. During the Wednesday office hours, I will go over the solution for the assignments. **IMPORTANT** - You can access either OR both office hour times available on Monday and Wednesday, regardless of what class you are enrolled in.

READINGS

There are recommended readings from the text for each topic. The text is **not required**, and the tests will only include the material seen in class. During the quarter journal articles may be posted as class exercises.

DISCUSSION SECTIONS

Discussion sections will take place at the scheduled times using Zoom. Sections are **NOT** mandatory; but highly recommended. During discussion sections the IAs will go over the problem sets. You can attend any of the discussion sections (notice the schedule for the sections posted on the first page of the syllabus and on CANVAS), but please notify the IA.

DISCUSSION FORUMS will be available through CANVAS for students to post questions.

TESTS AND GRADING:

Quizzes (10% each) – Total 90%

Assignments – Total 10%

Extra bonus points

Quizzes: There will be 10 Quizzes delivered through CANVAS. Each quiz will be based on material for that section of the course up to the lecture preceding the quiz. The last quiz taken during **finals week** will be cumulative.

- Friday - October 16
- Friday – October 23
- Friday – October 30
- Friday – November 6
- Friday – November 13
- Friday – November 20
- Wednesday – November 25
- Friday – December 4
- Friday – December 11
- **Finals week – Cumulative Quiz – Saturday, Dec 12 – Class A00 and B00 at 8:00 am**

There are **NO** make-up quizzes. The lowest quiz grade will be dropped. If you miss a quiz due to a family or medical emergency or technical issues that will be the grade you drop. However, you **MUST** take the quiz during finals week.

All quizzes and assignments will be delivered using CANVAS. Please use Google Chrome, as some of the images do not show in other browsers. The quizzes will take place during the **Friday designated class time (Class A00 9:10 AM and Class B00 11:10 AM)**. **You will have to attend the lecture time you are enrolled in to be able to take the quiz.** For the quiz dates see the schedule. The instructor and IAs will be available on Zoom to clarify any questions. The Zoom meeting ID is <https://ucsd.zoom.us/j/92051784289> or you can join through the Course calendar on CANVAS.

Any questions concerning quizzes will be addressed during IAs office hours, **NOT** by email. Requests for re-grading questions of the exam must be submitted as a written request via email to your IA.

Assignments: Weekly assignments will be posted on CANVAS every Monday, starting on week 1. You will be able to answer the assignments after watching the lectures for that week. Assignments are due on Wednesdays at 9 AM and the answers will be discussed during the Wednesday office hours (9 am and 11 am).

Late assignments are not accepted. However, you can miss one of the assignments (1-9) and still get full points. Please try to answer the assignments without looking at your notes or using other resources as they will prepare you for the weekly quizzes.

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| • Assignment 1 – week 1 | Due on: October 7 at 9 AM |
| • Assignment 2 – week 2 | Due on: October 14 at 9 AM |
| • Assignment 3 – week 3 | Due on: October 21 at 9 AM |
| • Assignment 4 – week 4 | Due on: October 28 at 9 AM |
| • Assignment 5 – week 5 | Due on: November 4 at 9 AM |
| • Assignment 6 – week 6 | Due on: November 11 at 9 AM |
| • Assignment 7 – week 7 | Due on: November 18 at 9 AM |
| • Assignment 8 – week 8 | Due on: November 25 at 9 AM |
| • Assignment 9 – week 9 | Due on: December 2 at 9 AM |
| • Assignment 10 – week 10 | Due on: December 9 at 9 AM |

Cheating Any student caught cheating will receive an F in the course. For information on academic integrity at UCSD visit the following website

<http://senate.ucsd.edu/manual/appendices/app2.htm>

All quizzes are **Closed Book**. Time should not be an issue if the quizzes are taken under the proper conditions. Please refrain from accessing lecture notes, other websites, or resources. That is considered cheating and will be penalized. We can monitor time spent in each question and time not spent on the canvas page per question for each student. So, please be mindful of not using other resources when taking the quizzes, as you will not be able to complete them. We understand that when using zoom to ask the IAs or instructor questions you will be away from the canvas page, but this should not take as long.

Students suspected of academic integrity violations on quizzes will be asked to join a Zoom meeting and will be asked to justify their answers. If the instructor and an IA are not convinced during the meeting, or the student refuses to participate, the incident will be reported to the Academic Integrity Office.

IMPORTANT – Please do not post any class lectures, documents, problem sets or quiz questions on public websites. These materials are my intellectual property and you must not make them public without my authorization.

Date	Topic	Problem sets
Oct. 2	<ul style="list-style-type: none"> ONLY SYNCHRONOUS CLASS – Syllabus and introduction 	
Week 1 Oct. 5-9	<ul style="list-style-type: none"> Background, membranes, membrane transport Resting membrane potential, Ohm's law, Nernst equation, Goldman-Hodgkin-Katz equation Neuron structure and function, channels 	Problem set 1
Oct 16	QUIZ 1 – Class A00 at 9:10 am and Class B00 at 11:10 am	
Week 2 Oct 12-16	<ul style="list-style-type: none"> Action potentials, signal transmission along axons, Synaptic transmission, neurotransmitters Central nervous system components, functional anatomy of the brain 	Problem set 2
Oct 23	QUIZ 2 – Class A00 at 9:10 am and Class B00 at 11:10 am	
Week 3 Oct 19-23	<ul style="list-style-type: none"> Functional anatomy of the spinal cord, reflex arcs Motor pathways, sensory physiology 	Problem set 3
Oct 30	QUIZ 3 – Class A00 at 9:10 am and Class B00 at 11:10 am	
Week 4 Oct 26-30	<ul style="list-style-type: none"> Efferent division of the peripheral nervous system Endocrinology, signal transduction, homeostasis, feedback loops Endocrinology continuation 	Problem set 4
Nov 6	QUIZ 4 – Class A00 at 9:10 am and Class B00 at 11:10 am	Problem set 5
Week 5 Nov 2-6	<ul style="list-style-type: none"> Striated skeletal muscle – molecular mechanisms that generate force, contraction-relaxation cycle Motor units, mechanics of body movement, fiber types Smooth muscle 	
Nov 13	QUIZ 5 – Class A00 at 9:10 am and Class B00 at 11:10 am	
Week 6 Nov 9-13	<ul style="list-style-type: none"> Introduction to the cardiovascular system, cardiac anatomy Cellular cardiac physiology, myogenic contraction, electrophysiology Electrocardiogram Nov 11 Veterans Day – No class 	Problem set 6
Nov 20	QUIZ 6 – Class A00 at 9:10 am and Class B00 at 11:10 am	
Week 7 Nov 16-20	<ul style="list-style-type: none"> Cardiac mechanics Regulation of heart function by the ANS 	Problem set 7
Nov 25 Wed	QUIZ 7 – Class A00 at 9:10 am and Class B00 at 11:10 am	Problem set 8
Week 8 Nov 23-27	<ul style="list-style-type: none"> Hemodynamics: systemic and pulmonary loops, Ohm's law Hemodynamics: material exchange between blood and tissues Nov 26-27 Thanksgiving – No class 	
Dec 4	QUIZ 8 – Class A00 at 9:10 am and Class B00 at 11:10 am	
Week 9 Nov 30- Dec 4	<ul style="list-style-type: none"> Regulation of the cardiovascular system: CO and BP Osmolarity, body fluid compartments: kidney anatomy and function Renal cortex: filtration and reabsorption 	Problem set 9
Dec 11	QUIZ 9 – Class A00 at 9:10 am and Class B00 at 11:10 am	
Week 10 Dec 7-11	<ul style="list-style-type: none"> Renal medulla: gradients, water permeability, Vasopressin Renal medulla: Vasopressin 	
Dec 12	QUIZ 10 – CUMULATIVE – Class A00 and B00 at 8:00 AM	

Reading list

Topic	Silverthorn 8th ed
• Background, membranes, membrane transport	32-47, 130-160, 175-177
• Resting membrane potential, Ohm's law, Nernst equation, Goldman-Hodgkin-Katz equation	161-166, 248-251
• Neuron structure and function, channels	239-245
• Action potentials, signal transmission along axons,	251-261
• Synaptic transmission, neurotransmitters	266-273, 274-277
• Central nervous system components, functional anatomy of the brain	299-308
• functional anatomy of the spinal cord, reflex arcs	291-298, 442-451
• Motor pathways, sensory physiology	
• Efferent division of the peripheral nervous system	327-340, 391-393, 454-457
• Endocrinology, signal transduction, homeostasis, feedback loops	207-216
• Endocrinology continuation	219-223
Striated skeletal muscle – molecular mechanisms that generate force, contraction-relaxation cycle	400-413
• Motor units, mechanics of body movement, fiber types	414-420
• Smooth muscle	427-433
• Introduction to the cardiovascular system, cardiac anatomy	463-464, 471-479
• Cellular cardiac physiology, myogenic contraction, cardiac electrophysiology	483-485
• Cardiac electrophysiology, electrocardiogram	486
• Cardiac mechanics	487-498
• Regulation of heart function	
• Hemodynamics: systemic and pulmonary circulatory loops, Ohm's law for blood flow	
• Hemodynamics: material exchange between blood and tissues	466-471
• Regulation of the cardiovascular system: CO and BP	513-528
• Body fluid compartments: kidney anatomy and function	627-633
• Renal cortex: filtration and reabsorption	634-646
Renal medulla: gradients, water permeability, Vasopressin	644-677
• Renal medulla: Vasopressin	644-677

Topic	Silverthorn, 8th edition
Metabolism, membranes, diffusion, osmosis, tonicity	61-62, 134-150
Resting membrane potential, Ohm's law, Nernst equation, Goldman-Hodgkin-Katz equation	153-158, 236-239
Neuron structure and function, channels	227-233
Action potentials, signal transmission along axons,	240-251
Signal transmission along axons continuation, synaptic transmission	253-263
Central nervous system components, spinal cord, reflex arcs	277-284, 291, 421
Functional anatomy of the brain	285-294
Sensory physiology, motor pathways	294, 311-324, 371
Efferent division of the peripheral nervous system	360-367
Endocrinology	169-175, 197-213
Striated skeletal muscle – molecular mechanisms that generate force, contraction-relaxation cycle	379-396
Motor units, mechanics of body movement, fiber types	393, 396-400
Smooth muscle	404-410
Introduction to the cardiovascular system, cardiac anatomy	436-437, 443-447, 439-442
Cellular cardiac physiology, myogenic contraction, cardiac electrophysiology	449-455, 490
Electrocardiogram	457
Cardiac mechanics	461-464
Hemodynamics: systemic and pulmonary circulatory loops, Ohm's law for blood flow	479-495
Hemodynamics: material exchange between blood and tissues	496-497
Regulation of the cardiovascular system: Cardiac output and BP	482-487
Body fluid compartments: anatomy and function of the kidneys	590-591
Renal cortex: filtration and reabsorption	594-606
Renal medulla: gradients, water permeability and Vasopressin	619-632