

# PHYSIOLOGY LAB E112L

## DR. NANCY AGUILAR-ROCA

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**Office hour:** Thurs 2-3pm, SH329

**One-on-one:** <http://nancy-aguilar-roca.youcanbook.me>

## MANDATORY DISCUSSION

Mondays 5:00 - 6:50 pm ELH 100

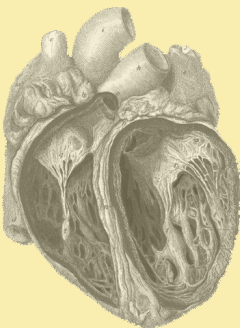
## ALL LABS ARE IN SH 272

## CLASS WEBSITE

<https://canvas.eee.uci.edu/courses/1652>

## ADMINISTRATIVE TA

Kate Gallagher: [mkgallag@uci.edu](mailto:mkgallag@uci.edu)



## Overview

One day someone in my family came to me with a newspaper article about a food supplement for diabetics. It was a really expensive supplement and he wanted to know if it would really help his diabetes. Fortunately, I was able to do a primary literature search to help make a decision. Your friends and family may approach you with similar questions after you take a physiology class. So, by the end of this course, you should be able to

- critically evaluate physiological research that may appear in the media.
- find journal articles relevant to a physiological condition.
- give an overview of the structure and function of the systems we study in lab.
- form a hypothesis and propose a physiological experiment to test it.
- determine whether physiological data supports a hypothesis.

## Becoming an expert

The transition from introductory level to expert isn't easy. The expectation set by the University is that for every hour of in-class instruction, students will spend at least 1 to 2 hours studying on their own. Therefore, you should expect to spend at least 10 hours per week on this class (~5 hours of instruction + 5 or more hours of studying).

## Attendance

You are responsible for attending all Discussions and Labs. To make-up a Lab because of an excused absence (e.g. illness with emergency room receipt, accident with police report, interview with invitation letter), you must get approval from Dr. Aguilar-Roca. Missed labs may be made up only during the week when that lab set-up is

available. There will be no make-up labs after the scheduled week for any given lab. You will do the homework assigned to the make-up lab.

## Materials required

- 1) iClicker version 1 or 2** (but not iClicker Go) - Available at the bookstore. It must be registered by the first day of class. iClicker clears its registration data every August, so you may need to re-register.
- 2) Perceptive account.** Details will be provided on Mon Apr 4.
- 3) Any college level human physiology textbook.** This class builds on Human Physiology E109. If you remember everything from that class, you won't need a book. Otherwise, you should have a book. Here is a [link to a free online textbook](#).
- 4) Print-out of lab worksheets** (1 page/sheet; download from course website)

## Labs

Closed toed shoes and long pants that **cover the ankles** are required. **NO EXCEPTIONS.** You will be asked to leave the lab if you are wearing sandals, flip-flops,



Lab coat and goggles will be required for some labs. A limited number of extras are available in the lab for you to borrow. You do not need a dissection kit. (Note: aprons are no longer acceptable)

## Accommodations

I am happy to provide accommodations for students with learning or physical disabilities. Please identify yourself to me during the first week of class so that we may discuss ways that will enhance your learning experience. All such discussions will be fully confidential unless you state otherwise. All requests for alternate exam policies will be coordinated through the UCI Disability Services Center <http://www.disability.uci.edu/>.

## Contacting me

I will be available during posted office hours and by appointment. I will do my best to respond to your emails within 24 hours. I enjoy hearing from students and I will be even happier to hear from you if you observe the following guidelines:

- Use a relevant subject line.
- Start emails with "Dear Dr. Aguilar-Roca,"
- Assume that I'm too old to understand IM and text-messaging abbreviations.
- Proofread. Auto-corrected renditions of physiological terms are an endless source of amusement, but they hinder efficient communication.
- Sign with the name you prefer to be called.

I try to set aside time every week for one-on-one appointments with students (for everything from help with writing to physiology concepts to life in general). Just put yourself on my calendar - <https://nancy-aguilar-roca.youcanbook.me/>

## Personal Conduct

You are expected to conduct yourselves in a manner consistent with UCI Principles of Community <http://www.dos.uci.edu/conduct/students/code-of-student-conduct-principles-of-community.php>

- Respect - We understand that respect is the cornerstone of human interaction.
- Intellectual curiosity - We are committed to learning, teaching, creativity and research.

- Integrity - We tell the truth and strive to earn the trust of those around us.
- Commitment - We always give our best effort.
- Empathy - We act with compassion and sensitivity.
- Appreciation - We appreciate different opinions and points of view.
- Fun - We enjoy our lives to the fullest.

**If you observe misconduct**, please bring it to the immediate attention of any instructor. You will remain anonymous.



## Academic Honesty

There is zero tolerance for cheating, including "clicking-in" for someone, in this class. In the event of cheating, the appropriate campus-wide policies will be followed, including contacting the appropriate deans. Refer to <http://www.dos.uci.edu/conduct/students/code-of-student-conduct-grounds-for-discipline.php> for details. Academic dishonesty or cheating is defined as an intentional act of fraud in which a student seeks to claim credit for the work or efforts of another. This includes assisting other students in acts of dishonesty or coercing students into acts of dishonesty, whether it is on writing, lab work, or exams. If you are not sure if something is cheating or not, ask!

**If you observe cheating**, please bring it to the immediate attention of any instructor. You will remain anonymous.



<http://www.the-aps.org>

## About Canvas

This class is part of the pilot project for implementing the Canvas course management system at UCI. As with any pilot project, there will be glitches. I promise that you will never lose points because of a technical issue. Thank you in advance for your patience and understanding.

You are going to have two Canvas course pages: one for Discussion and one for Lab Section. You will probably spend the most time on the Modules page shown below.

The screenshot shows the Canvas LMS interface. On the left is a blue sidebar with icons for Account, Dashboard, Courses, Calendar (circled in orange), and Inbox. The main content area shows the course navigation menu with links to Home, Syllabus, Modules (highlighted), Discussions, Grades, People, and i-clicker registration. The Modules page is displayed, showing sections for Syllabus & Schedule, Weekly Labs, Lab Reports, and Exams. Orange arrows point from text labels to specific elements: 'Discussion Board & Announcements' points to the top of the Modules page; 'Main course syllabus & schedule' points to the Syllabus & Schedule section; 'Lab Protocols & Worksheets' points to the Weekly Labs section; 'Online quiz information' points to the Lab Reports section; 'Discussion notes & podcast links' points to the Exams section; 'Supplements' points to the Exams section; 'Go to your Lab Section page for' points to the Exams section; 'Pre-lab methods quizzes' points to the Exams section; 'Weekly lab assignments' points to the Exams section; 'Submitting lab report drafts' points to the Exams section; 'Information about lab reports' points to the Lab Reports section; 'Practice exams' points to the Exams section; 'Answer keys' points to the Exams section; and 'All due dates will be listed on the Calendar' points to the Calendar icon in the sidebar.

**Discussion Board & Announcements**

**Main course syllabus & schedule**

**Lab Protocols & Worksheets**

**Online quiz information**

**Discussion notes & podcast links**

**Supplements**

**Go to your Lab Section page for**

**Pre-lab methods quizzes**

**Weekly lab assignments**

**Submitting lab report drafts**

**Information about lab reports**

**Practice exams**

**Answer keys**

**All due dates will be listed on the Calendar**

**Week 1: Respiratory Physiology**

**Discussion Materials**

- Pre-class notes (posted by 9pm on Sunday)
- Post-class notes
- Podcast

**Lab Materials**

- Lab Protocol
- Data Worksheets

You should be able to do the following before taking the [Respiratory Physiology Review quiz](#). The answers can be found in the lab protocol and/or any physiology textbook. This week only, the quiz will be due on Wednesday at 5pm. For the remainder of the quarter it will be due at 5pm on Mondays.

- List the steps of a negative feedback loop
- Name the anatomical structures of the respiratory system that an oxygen molecule travels through on its way from the atmosphere to the blood.
- Use Dalton's law to calculate the partial pressure of a gas, given the atmospheric pressure and percentage
- Define tidal volume, dead space, residual volume, (forced) vital capacity and total lung capacity.
- Explain why radius has a greater effect than viscosity or length on the resistance to flow in a tube
- State the difference between total pulmonary ventilation and alveolar ventilation
- Explain why  $P_{O_2}$  higher in the arterial blood than in venous blood, and why  $P_{CO_2}$  higher in venous blood than in arterial blood
- Draw the graph that shows the relationship between partial pressure of oxygen and percent saturation of hemoglobin
- Name the locations of the peripheral and central chemoreceptors that control respiration, and state what factors they sense in order to control respiration.
- Define restrictive and obstructive lung disease

You should be able to answer the following questions before taking the [Respiratory Physiology Lab Methods quiz](#). **This quiz will be on your lab section Canvas space and will be due at the start of your lab.**

- What is the proper way to set-up the spirometer flow-head?
- What pulmonary function variables will you measure with a spirometer?
- Which icons in LabScribe are used for changing the scale on the X-axis? The Y-axis?
- When you look at spirometer data in LabScribe, how will you know the difference between inhalation and exhalation?

I will do my best to NOT use any other online system (except Peerceptiv) to minimize confusion. A few tools are only on EEE (e.g. DropBox, Evaluations), but we won't use those very often.

## GRADES

**YOUR GRADE IN THE COURSE WILL BE BASED ON THE FOLLOWING (DETAILS ON PG. 5)\***

Activity	Notes	Points Possible	% of Grade
Weekly Online Physiology Review Quizzes	8 online quizzes worth 3 points each. Drop the lowest 2 quizzes.	18	6.8
Weekly Online Lab Methods Quizzes	8 Online quizzes worth 2 points each. Drop the lowest 2 quizzes.	12	4.5
In-class "Mini-midterms"	3 mini-midterms worth 20 points each. <b>No make-ups.</b>	60	22.6
Weekly iClickers	8 iClicker scores worth 1 point each. Drop the lowest 2.	6	2.3
Weekly Lab activities & assignments	9 Labs worth 5 points each. Drop the single lowest score.	40	15.1
Lab report draft submissions	17 points Total 1 pt – hypothesis 2 pts – 1st draft 4 pts – 2nd draft 10 pts – Peer review (entire draft)	17	6.4
Final Lab Report	Minus 5 points/day late	50	18.9
Final Exam	Cumulative	60	22.6
Instructor Evaluations	1 pt for Discussion; 1 pt for Lab	2	0.8
<b>TOTAL POSSIBLE</b>		<b>265</b>	

\*The final points available may change during the quarter due to unforeseen circumstances.

All scores will be posted in Canvas GradeBook. Tues, June 7 at 5pm is the deadline to report any missing or incorrect scores in GradeBook for the Discussion or Lab Section. Any requests after that will be ignored. Contact Kate Gallagher (mkgallag@uci.edu) about Discussion scores and contact your TA about Lab Section scores.

### Letter grade equivalents

Scores will be rounded to the nearest tenth of a point and assigned letter grades as follows:

- > 96.0% = A+; > 93.0% = A; > 90.0% = A-
- > 86.0% = B+; > 83.0% = B; > 80.0% = B-
- > 76.0% = C+; > 73.0% = C; > 70.0% = C-
- > 66.0% = D+; > 63.0% = D; > 60.0% = D-
- < 60.0% = F

If you earn 89.94%, that will be rounded to 89.9% and it will be a B+. If you earn 89.95%, that will be rounded to 90% and it will be an A-. If the overall class average at the end of the quarter is below 75.0% I will consider using a curve instead of a straight scale.

### Incompletes

Students in good standing (having minimally a "C" in the class) who cannot complete the course because of a documented emergency (such as an illness or accident verified with a doctor's note or police report) will be given an Incomplete and will need to make-up the material when the course is offered again. An Incomplete grade is NOT given simply because a student is not doing well in the course.



## FYI

## Activities worth points

<b>Weekly On-line Physiology Review Quizzes</b>	On-line Physiology Review quizzes on Canvas will be posted 3 days before Discussion and will close at the start of Discussion. These quizzes are designed to help you review the material from the physiology lecture course that will be the basis of the lab. Each quiz will be worth 3 points and each correct answer will be worth between 0.1 and 0.5 points. There will be a 20 min time limit, but you can take it up to 2 times and the highest score will be recorded. The two lowest scores from the quarter will be dropped.			
<b>Weekly On-line Lab Methods Quizzes</b>	On-line Lab Method quizzes on Canvas will be posted 2 days before your lab and will close at the start of your lab. These quizzes are designed to expose you to the techniques that you will use in the lab. Each quiz will be worth 2 points and each correct answer will be worth between 0.1 and 0.5 point. There will be a 20 min time limit, but you can take it up to 2 times and the highest score will be recorded. The two lowest scores from the quarter will be dropped.			
<b>Mini-midterms</b>	There will be 3 in-class Mini-Midterms that cover the material from the preceding week(s). The questions will be in the style of the questions for the final exam. <b>Make-up mini-midterms will NOT be given.</b> If you miss a mini-midterm for a documented reason (e.g. medical school interview, emergency room visit, traffic accident with police report or tow truck receipt), the average of your other mini-midterms will replace the missing score.			
<b>iClickers</b>	iClicker participation will be worth 1 point per Discussion. Your iClicker must be registered BEFORE 5pm on Apr 4. iClicker purges its database every summer, so you may need to re-register. You must respond to at least 75% of the questions during class to receive credit for that day. The lowest 2 scores will be dropped.			
<b>Weekly Lab Activities and Assignments</b>	Activities designed by your lab section instructor may include oral presentations, short quizzes, worksheets, data analysis and writing. The single lowest lab score will be dropped. Your Lab TA may offer extra credit, but your final lab score can not exceed 40 points. Final lab scores may be adjusted so that the average scores of all lab sections are within one standard deviation of each other.			
<b>Cumulative final exam</b>	The final exam will be primarily multiple choice questions with a few short answer questions. In the event of documented illness or emergency, i.e., you have an emergency room receipt or police report, I will allow a make-up for the final exam only. A make-up will be allowed for students who already have a final at the same time. (Having <u>one</u> other final on the same day is not a valid reason.)			
<b>Lab Reports</b>	You will write a lab report based on the Exercise Physiology Lab. Details are on the class webpage. You will submit 2 drafts and one peer review (based on a peer-review rubric). Because all submissions are on-line, assume that there will be a computer malfunction and plan to submit hours before the actual deadline. "My computer/server/WiFi crashed", "My dog at my printer cable" other technological issues are NOT valid excuses for late submissions. You will be graded on whatever you submitted before the deadline, even if it's the wrong version. Any post-deadline submissions will be penalized as stated below.			
<b>Important deadlines for lab reports</b>	<b>Date</b>	<b>What is due at 9pm</b>	<b>Points</b>	<b>Late Penalties</b>
	Fri Apr 22	Hypothesis (+0.5) and list of subjects (+0.5)	1	-0.5 point/day
	Fri Apr 29	1st draft: hypothesis (+0.5 pts), materials & methods (+0.5 pts), results (+1 pt)	2	-1 point/day
	Fri May 6	2nd draft: above sections (+0.5pts) + Introduction (+1.5pts), Discussion (+1.5pts), References (+0.5pts)	4	-2 point/day
	Fri May 13	Complete draft (above + abstract) due for peer review	<b>No Late Submissions</b> 10 points total for peer review & back evaluation	
	Fri May 20	All peer reviews are due		
	Tues May 24	All back evaluations are due		
	Fri May 27	Final Lab Report	50	-5 point/day



## DISCUSSION AND LAB SCHEDULE

Any handouts or supplemental reading will be posted on the course website. The textbook readings for the 6th edition are listed in the lab protocols and in the pdfs that will be posted for each mandatory Discussion.

<b>Week #</b>	<b>Date</b>	<b>Discussion</b> <i>Weekly online physiology review quizzes are due at 5pm on Mondays</i>	<b>Lab topic for the week</b> <i>Weekly online lab methods quizzes are due at the start of your lab</i>
1	Mar 28		Respiratory Physiology
2	Apr 4	Your iClicker must be registered before class starts on Monday	Cardiovascular Physiology <i>Dissection: bring goggles &amp; lab coat (or borrow from a friend)</i>
3	Apr 11	<b>Mini-midterm #1</b> (Topics: Respiratory and Cardiovascular Physiology)	Exercise Physiology <i>Prior to your lab, you must sign-up for a time-slot and select a biker.</i>
4	Apr 18	<i>Due Fri Apr 22 @ 9pm: Lab report hypothesis</i>	Data analysis workshop (Computer lab, 2nd floor Nat Sci 1) 5 Points total for the workshop +1.5 for workshop worksheet +1.5 Online quiz +2 Homework due on Canvas The points from the workshop will count as one lab assignment.
5	Apr 25	<i>Due Fri Apr 29 @ 9pm: Materials &amp; methods, and Results</i>	Metabolic rates
6	May 2	<b>Mini-midterm #2</b> (Topics: Exercise Physiology, Data Analysis, Metabolic Rates)  <i>Due Fri May 6 @ 9pm: Introduction and Discussion</i>	Hindlimb Anatomy
7	May 9	<i>Due Fri May 13 @ 9pm: Complete lab report for peer review</i>	Muscle contraction
8	May 16	<i>Due Fri May 20 @ 9pm: Peer-evaluations</i>	Human EMGs
9	May 23	<b>Mini-midterm #3</b> (Topics: Hindlimb Anatomy, Muscle Contraction, Human EMGs)  <i>Due Tues May 24 @ 9pm: Back evaluations</i> <i>Due Fri May 27 @ 9pm: Final lab reports</i>	Diabetes
10	May 30	<b>Monday Holiday</b>	No Discussion, No labs
Final Exam	<b>Tentative</b> Wed Jun 8 10:30am - 12:30pm	<b>Tentative Date for Comprehensive Final Exam</b> The Registrar will finalize this at the end of Week 5. Believe me, I want to know as much as you do and I'll tell you as soon as I know something. Please don't ask me about it before then.	