

**BISC 307 (General Physiology), Spring 2023 (Tentative – Subject to Revision)**

Date	Day	Topic	Silverthorn – 8 <sup>th</sup> Ed.	Quizzes*
Jan 9	M	01 Introduction; Evolutionary Perspectives 1	Ch 1, Ch 6 (181-190)	
Jan 11	W	02 Evolutionary Perspectives 2	See Blackboard for resources	
Jan 13	F	03 Evolutionary Perspectives 3	See Blackboard for resources	----
Jan 16	M	<i>Holiday (MLK Day) – No Class</i>	----	
Jan 18	W	04 Regulation of Metabolic Fuel 1	Ch 22 (692-719)	
Jan 20	F	05 Regulation of Metabolic Fuel 2	Ch 22 (692-719)	Quiz 1
Jan 23	M	06 Adrenal Glucocorticoids 1	Ch 7, Ch 23 (728-734)	
Jan 25	W	07 Adrenal Glucocorticoids 2	Ch 7, Ch 23 (728-734)	
Jan 27	F	08 Adrenal Glucocorticoids 3**	Ch 7, Ch 23 (728-734)	Quiz 2
Jan 30	M	09 Thyroid, Growth Hormone	Ch 23 (734-741)	
Feb 1	W	10 Calcium Balance	Ch 23 (741-751)	
Feb 3	F	11 Reproduction 1	Ch 26 (800-815)	Quiz 3
Feb 6	M	<b>EXAM 1</b>	Jan 9 through Feb 1 (10 lects)	
Feb 8	W	12 Reproduction 2	Ch 26 (815-836)	
Feb 10	F	13 Reproduction 3	Ch 26 (815-836)	Quiz 4
Feb 13	M	14 Respiratory System 1	Ch 17	
Feb 15	W	15 Respiratory System 2	Ch 18	
Feb 17	F	16 Respiratory System 3	Ch 18	Quiz 5
Feb 20	M	<i>Holiday (President's Day) – No Class</i>	----	
Feb 22	W	17 Cardiovascular System 1	Ch 14 (432-452)	
Feb 24	F	18 Cardiovascular System 2***	Ch 14 (432-452)	Quiz 6
Feb 27	M	19 Heart as a Pump 1	Ch 14 (452-474)	
Mar 1	W	20 Heart as a Pump 2	Ch 14 (452-474)	
Mar 3	F	21 Heart as a Pump 3	Ch 14 (452-474)	Quiz 7
Mar 6	M	<b>EXAM 2</b>	Feb 3 through Mar 1 (10 lects)	
Mar 8	W	22 Blood Vessels & Pressure	Ch 15 (476-489)	
Mar 10	F	23 Distribution of Blood	Ch 15 (489-506)	Quiz 8
Mar 13	M	<i>Spring Break</i>	----	
Mar 15	W	<i>Spring Break</i>	----	
Mar 17	F	<i>Spring Break</i>	----	----
Mar 20	M	24 Membrane Dynamics	Ch 5	
Mar 22	W	25 Electrical Signals 1	Ch 8 (224-249)	
Mar 24	F	26 Electrical Signals 2	Ch 8 (224-249)	Quiz 9
Mar 27	M	27 Action Potentials 1	Ch 8 (224-249)	
Mar 29	W	28 Action Potentials 2	Ch 8 (224-249)	
Mar 31	F	29 Synaptic Transmission 1	Ch 8 (249-265)	Quiz 10
Apr 3	M	30 Synaptic Transmission 2	Ch 8 (249-265), Ch 11 (355-368)	
Apr 5	W	31 Skeletal Muscle 1	Ch 11 (368-372), Ch 12 (374-400)	
Apr 7	F	<b>EXAM 3****</b>	Mar 3 through Apr 3 (10 lects)	Quiz 11
Apr 10	M	32 Skeletal Muscle 2	Ch 12 (374-400)	
Apr 12	W	33 Skeletal Muscle 3	Ch 12 (374-400)	
Apr 14	F	34 Smooth Muscle	Ch 12 (400-409)	Quiz 12
Apr 17	M	35 Kidney Function & Filtration 1	Ch 19 (587-600)	
Apr 19	W	36 Kidney Function & Filtration 2	Ch 19 (587-600)	
Apr 21	F	37 Tubular Reabsorption & Secretion	Ch 19 (600-615)	Quiz 13
Apr 24	M	38 Water & Salt Balance 1	Ch 20 (618-636)	
Apr 26	W	39 Water & Salt Balance 2	Ch 20 (618-636)	
Apr 28	F	40 Volume, Osmolarity, Acid-Base Balance	Ch 20 (636-652)	Quiz 14
May 3	W	<b>EXAM 4, 2:00 – 4:00 pm</b>	Apr 5 through Apr 28 (10 lects)	

\* Quizzes are available at 5 pm on indicated Fridays, and are due the following Tuesday by 10 am.

\*\* January 27 is the last day to drop without a mark of "W" and with tuition refund.

\*\*\* February 24 is the last day to drop without a mark of "W" and without tuition refund.

\*\*\*\* April 7 is the last day to drop with a mark of "W".

## A. General Course Description and Policies

### Catalog Description

BISC 307L General Physiology (4 units, Spring semester only) Physiological functions of the circulatory, endocrine, integumentary, musculoskeletal, nervous, respiratory, and urogenital systems of animals. Lecture, 3 hours; laboratory, 3 hours. Prerequisite: BISC 220L or BISC 221L.

### Overview

Physiology is unique among the biomedical sciences in its focus on the functions of intact, living organisms. It is especially concerned with homeostasis, which refers to regulation of conditions inside the body within the narrow limits that are compatible with life. This course will cover the physiology of human cells, tissues, organs, and organ systems, with emphasis on mechanisms by which homeostasis is maintained, and on the integration of each system with other systems. Evolution is emphasized as a unifying concept.

### Instructor

Prof. Albert Herrera, HNB 116, 213-740-9177, [aherrera@dornsife.usc.edu](mailto:aherrera@dornsife.usc.edu)

### Laboratory Manager

Dr. Michael Moore, ZHS 371B, 213-740-6084, [moore@dornsife.usc.edu](mailto:moore@dornsife.usc.edu)

### Laboratory Instructors

Andrew Do  
[andrewdd@usc.edu](mailto:andrewdd@usc.edu)

Vageh Oskoezadeh  
[oskoeeza@usc.edu](mailto:oskoeeza@usc.edu)

### Textbooks

- *Human Physiology: An Integrated Approach*, by Dee Unglaub Silverthorn, 8<sup>th</sup> edition.  
*Note:* Reading assignments are given for the 8<sup>th</sup> edition, but that edition is not substantially different from the previous (7<sup>th</sup>) edition. Students interested in saving money may opt for the older version. Corresponding reading assignments for the 7<sup>th</sup> edition will be posted on Blackboard (see Course Documents). Users of the 7<sup>th</sup> edition should consult the 8<sup>th</sup> edition to check for differences.

### Blackboard (<https://blackboard.usc.edu/>)

- All course materials, information, links to Zoom sessions, recordings, quizzes, and grades will be posted on Blackboard until Commencement Day. We will also make extensive use of Blackboard discussion forums, as will be explained in lecture. Blackboard is to be used only for appropriate, course-related activities. Inappropriate use of Blackboard and other electronic resources may result in disciplinary action (see Academic Integrity section below, p. 7-8).

### Lecture

MWF 1:00-1:50 pm, class no. 13018R

- **Lectures will be given remotely**, via live (synchronous) Zoom sessions at the designated lecture times. The sessions will start with students' video and audio muted, but students are encouraged to turn on their cameras and audio. *This will help foster a sense of community and collaboration. Questions during lecture are also encouraged, either verbally or via the Zoom chat window as you prefer.*
- Lectures will be recorded and made available via Zoom as streaming video and downloadable audio files. Links to the Zoom recordings will be posted in Blackboard.
- For some topics, basic or introductory material will be presented via short, pre-recorded video lectures. When we meet in class, we can then use the lecture time to discuss more advanced aspects of the topic.

So, it is important that you view and understand the pre-recorded lectures before coming to class. This approach will also free up lecture time for interactive problem-solving, discussion of applications, and analysis of recent research – activities that will help you prepare for the lecture exams. Not every topic will follow this approach. Some topics will be covered entirely by traditional lectures.

- *Important Advice:* Please do not use the lecture recordings as a substitute for regular attendance at lecture or as an excuse to procrastinate. In the past, students who earned the highest grades were those who attended nearly every lecture and took careful notes. Shortly after each lecture, use the recordings to fill gaps in your notes and to focus on the more difficult material. In this way, you will keep up with the lecture schedule and be able to use the time just before exams to practice applying your knowledge to solve novel problems. Be creative in your use of these recordings. For example, keep track of the approximate elapsed time during the lecture, so you can note the timing of material you need to review. Try viewing the video recordings in small groups, so you can pause and discuss the material as you proceed. Take advantage of the portability of the audio recordings. Download them to your phone, computer, or other audio player and look for opportunities to listen when you are not otherwise occupied with mindful tasks. Speed up the playback or better yet, slow it down!

### Laboratory

- See Part B below for the laboratory syllabus. **Lab sections will be conducted in-person.**

### Lecture Exams

Exam 1: Monday, Feb 6, 1:00-1:55 pm  
Exam 2: Monday, Mar 6, 1:00-1:55 pm  
Exam 3: Friday, Apr 7, 1:00-1:55 pm  
Exam 4: Wednesday, May 3, 2:00-4:00 pm

- Lecture exams will consist entirely of multiple choice and true/false questions. The exams are closed-book, i.e., you may not consult books, notes, internet sources, other references, or other persons during the exams.
- Lecture exams cover lecture subjects only; laboratory subjects will not be covered. Lecture exams are not cumulative; each of the four exams will be worth the same number of points and will cover 10 lectures, as specified in the Lecture Schedule. There will not be a comprehensive final. Exam 4 will be given at the scheduled time of the final but will cover only the last 10 lectures of the course.
- Thoroughly memorizing and understanding the terms and concepts are essential. However, this level of learning will leave you only about half-prepared for the lecture exams. **On exams, you will be required to apply what you learned to solve novel problems, many of which will pertain to situations that we never specifically discussed.** Students find this approach very challenging but when they master it, as most of you will, the level of satisfaction is high. Even better, you will likely discover that you learned more than you thought you would. We will not ask more of you than you can handle, if you are willing to work hard. Please see the next section (Lecture Quizzes) for additional comments on exam questions.

### Lecture Quizzes

- Fourteen quizzes will be administered via Blackboard. The quizzes will be posted by 5 pm on Fridays and must be completed by 10 am on the following Tuesday. Questions will cover the lecture material discussed on the previous Friday, Monday, and Wednesday (see the table below for specific coverage and exceptions). Each quiz will consist of 4 questions, worth 0.5 points each. Question types will be multiple choice, true/false, or short answer. To allow students to miss two quizzes for any reason, and to excuse uncharacteristically low scores, only the highest 12 scores will be counted toward the final grade. Therefore, a maximum of 24 points can be earned from the quizzes, or 4 % of the total course grade. No accommodations will be made for students who take fewer than 12 quizzes. Quiz answers will be posted

at the 10 am Tuesday deadline. You will likely find it helpful to discuss the quiz questions and answers at the Q&A sessions on Tuesdays and Fridays (see below).

- My intention is to make the quiz questions as challenging as those that will appear on the more point-heavy exams. To do well in this course, it will not be sufficient to merely look up or memorize answers. You must also be able to apply your knowledge to solve novel thought problems. The quizzes are designed to give you low-stakes practice at this and to gauge your level of preparation for exams. This will only work, however, if you take the quizzes seriously and responsibly. You may consult your textbook and any other printed or electronic material. You may also discuss the quiz questions with fellow students, if those discussions focus on understanding the underlying principles. You should not simply share or reveal your answers to other students, nor try to obtain answers from current or former students, for several reasons. First, you will not know until after the deadline whether your answer is correct. Second, you may deprive a fellow student of a learning opportunity. Third, you will diminish your own chances for a better grade by broadcasting your hard-won answers. Fourth, quiz questions are revised regularly, usually with the goal of making them more challenging. Each quiz is worth only 0.3% of the course grade, but its potential value as a learning tool is much greater. The quizzes will require a disproportionately large amount of effort – on my part to craft challenging questions, and on your part to discern and understand the correct answers. It is likely that students who cheat by merely copying other students’ quiz answers will pay a price on exam days. Please don’t be one of those students. In the 14 years since we introduced the quizzes, students have come to see them as one of the most challenging parts of the course, but also one of the most valuable. If you take the quizzes seriously, we think you will come to the same conclusion.
- The following table summarizes important information about the quizzes.

Quiz No.	Posted by 5 pm on Fri	Deadline 10 am on Tues	Lectures Covered
1	Jan 20	Jan 24	1, 2, 3, 4
2	Jan 27	Jan 31	5, 6, 7
3	Feb 3	Feb 7	8, 9, 10
4	Feb 10	Feb 14	11, 12
5	Feb 17	Feb 22 (Wed)*	13, 14, 15
6	Feb 24	Feb 28	16, 17
7	Mar 3	Mar 7	18, 19, 20
8	Mar 10	Mar 21	21, 22
9	Mar 24	Mar 28	23, 24, 25
10	Mar 31	Apr 4	26, 27, 28
11	Apr 7	Apr 11	29, 30, 31
12	Apr 14	Apr 18	32, 33
13	Apr 21	Apr 25	34, 35, 36
14	Apr 28	May 2	37, 38, 39, 40

\* Deadline extended due to Feb 20 holiday

### Twice Weekly Question & Answer Sessions

- Dr. Herrera will hold live Q&A sessions via Zoom twice a week:  
Tuesdays, 12:00-12:50 pm  
Fridays, 2:00-2:50 pm (Q&A session for Apr 7 will be held one day earlier, on Thurs, Apr 6 at 2:00-2:50 pm)
- Q&A sessions will be recorded and archived via Zoom.

## Instructor Office Hours

Please contact Dr. Herrera directly for individual office hour appointments via Zoom. Office hours are intended for discussion of individual, confidential matters such as grades. Course subject matter and other public issues should be discussed in Q&A sessions so all students can benefit from the interchange.

## Grading

- Grades will be based on the total number of points earned on exams, online quizzes and laboratory work, as shown in the table below. After each exam, a curve and table will be posted that shows the letter grades that correspond to current point totals.

Portion	Item	Pts Each	Number	Total	Portion Totals
Lecture	Exams 1-4	100	4	400	Lecture = 424 pts
	Online Quizzes	2	14	24*	
Laboratory	Group Presentation	35	1	35	Lab = 176 pts
	Lab Quizzes	5	8	40	
	Lab Reports	30	3	90	
	General Participation	11	1	11	
*Only the highest 12 quiz scores will count.					Course total = 600 pts

- Final letter grades will be determined by the following scheme. The mean point total of the top 10% of students will be determined. Students who earn a certain high percentage of that mean will earn an A or A-. Students whose totals fall below the A- level but above a certain lower percentage will earn a B+, B, or B-. Students below the B- level but above an even lower percentage will earn a C+, C, or C-, etc.
- ***An important consequence of this scheme is that, for the most part, grading is not competitive in this class. There are not fixed numbers of As and Bs to be assigned. The more the point totals are skewed (clustered) toward high values, the more As and Bs will be assigned.***
- ***This scheme should facilitate cooperative learning and peer instruction. High-achieving students should help others; doing so will not jeopardize their high grades. By teaching others, students will solidify their own understanding. Methods for accomplishing this will be discussed.***

## Impairments Affecting Your Performance

- Students occasionally encounter difficulties that affect their academic performance, such as illness, accidents, bereavement, depression, anxiety, learning disabilities, and other problems. If you encounter such difficulties, please bring them to the attention of one of the instructors. We can refer you to sources of help and may be able to offer accommodations. All such discussions will be confidential. Please seek help as soon as you feel your performance is being affected. Specific policies regarding exams are explained in the next section.

## Support Services

- Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents as soon as possible. Reporting such incidents is important for the safety of the whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. A list of offices to which one can report such incidents, as well as sources of support for other issues, follows.
- Student Health Counseling Services (213) 740-7711 – on call 24/7 [engemannshc.usc.edu/counseling](http://engemannshc.usc.edu/counseling)  
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

- National Suicide Prevention Lifeline (800) 273-8255 – on call 24/7 [suicidepreventionlifeline.org](https://suicidepreventionlifeline.org)  
Free and confidential emotional support to people in suicidal crisis or emotional distress.
- Relationship & Sexual Violence Prevention Services (213) 740-9355 – on call 24/7  
[sites.google.com/usc.edu/rsvpclientservices/home](https://sites.google.com/usc.edu/rsvpclientservices/home). Free and confidential therapy services, workshops, and training for situations related to gender-based harm.
- Office of Equity and Diversity - Title IX (213) 740-5086 [equity.usc.edu](https://equity.usc.edu), [titleix.usc.edu](https://titleix.usc.edu)  
Information about how to get help or help a survivor of harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following protected characteristics: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations.
- Bias Assessment Response and Support (213) 740-7619 [lgbtqplus.usc.edu/resources/bias-incident-reporting/](https://lgbtqplus.usc.edu/resources/bias-incident-reporting/). Avenue to report incidents of bias, hate crimes, and microaggressions for appropriate investigation and response.
- Office of Student Accessibility Services (213) 740-0776 [osas.usc.edu](https://osas.usc.edu)  
Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs. Please see section below entitled “Students with Disabilities” for important course-specific information.
- Campus Support and Intervention (213) 821-4710 [campussupport.usc.edu](https://campussupport.usc.edu)  
Assists students, faculty, and staff in resolving complex personal, financial, and academic issues adversely affecting their success and wellbeing.
- Diversity at USC (213) 740-2101 [diversity.usc.edu](https://diversity.usc.edu)  
Information on events, programs and training, the Provost’s Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.
- USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – on call 24/7 [dps.usc.edu](https://dps.usc.edu), [emergency.usc.edu](https://emergency.usc.edu)  
Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.
- USC Department of Public Safety (Non-Emergency) - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call [dps.usc.edu](https://dps.usc.edu). Non-emergency assistance or information.

### Exam Policies

- **Re-grading:** Answers to lecture exam questions will be posted on Blackboard shortly after each exam. If you feel an error was made in the grading of your exam, you should submit your well-justified case to Dr. Herrera via email. Specify which questions you think were incorrectly graded and why.
- **Missed Exams:** *No make-up exams will be given.* Students who are unable to take an exam at the scheduled time must contact Dr. Herrera as soon as possible, preferably in advance. If the student has a valid, well-documented reason for missing the exam, a score equal to the average of the other 3 exams



5. SCampus (see Part B, paragraph 11):

<http://web-app.usc.edu/scampus/1100-behavior-violating-university-standards-and-appropriate-sanctions/>

6. Scientific Misconduct: [ooc.usc.edu/research-compliance/scientific-integrity/](http://ooc.usc.edu/research-compliance/scientific-integrity/)

### **Students with Disabilities**

Any student requesting academic accommodations based on a disability is required to register with the Office of Student Accessibility Services (OSAS) each semester. A letter of verification for approved accommodations can be obtained from OSAS and should be delivered to Dr. Moore early in the semester, *at least two weeks before Exam 1*. For more information, please call the OSAS office at 213-740-0776 or go to their website: [osas.usc.edu](http://osas.usc.edu).

### **Policies Concerning Student-Athletes**

Although the schedule of athletic competitions is somewhat uncertain due to COVID-related restrictions, USC's policy is that student-athletes may not be penalized when University-sanctioned competitions conflict with course activities or examinations. When a class will be missed for a sanctioned competition, the student-athlete should inform the instructor in advance. The student must provide the instructor with an Excused Absence Letter from Student-Athlete Academic Services (SAAS). Information about such letters can be found on the SAAS website (<https://saas.usc.edu/>). The letter must certify that the student-athlete is participating in a University-sponsored event that deserves accommodation. Accommodations will not be made for other types of conflicting events. More information on the University's policy on student-athletes can be found at [faculty.usc.edu/leadership/service/oaaaa/](http://faculty.usc.edu/leadership/service/oaaaa/). Arrangements for the accommodation must be agreed upon in advance of the event. If multiple team members will be absent, each must make an individual arrangement with the instructor. If an assignment is due on the date when class is missed, the instructor may require that it be turned in before the missed class or at the first class meeting after the student returns. If a test has been scheduled for the date when class is missed, the instructor may arrange with SAAS to have the test administered by an academically qualified proctor (not a coach) during the trip. Alternatively, the instructor may agree to pro-rate the exam score, i.e., substitute the missing exam score with a score based on the average of the student's scores for the other exams compared to the class average for those exams.

### **Email Communication**

To ensure privacy, only students' USC accounts (*usc.edu* domain name) can be used for email communications regarding confidential matters. Students are responsible for understanding the content of official messages sent to their USC accounts, and so should check their USC email regularly.

### **Emergency Preparedness / Course Continuity / COVID-19 Health and Safety Protocols**

If an officially declared emergency makes travel to campus infeasible, USC Emergency Information (<http://emergency.usc.edu/> or 213-740-9233) will provide information related to safety and course continuity. We expect that instruction will be continued by means of Blackboard, teleconferencing, video/audio recording, and other technologies. Alternative assignments may be given if classes are canceled for prolonged periods. If you have not already done so, please register with TrojansAlert and/or download the mobile safety app to facilitate communication during emergencies.

Information about the university's response to the COVID-19 pandemic can be found on the USC COVID-19 Resource Center ([coronavirus.usc.edu](http://coronavirus.usc.edu)).



## B. Laboratory

### Lab Schedule

The traditionally hands-on laboratory exercises in this course are being adapted for remote instruction. Lab activities will be announced and documentation will be provided in advance, as the semester progresses. There will be no lab exercises during the first two full weeks of the semester.

Wk	Dates	Day	Exercises	Comments
1	Jan 10 ↓ Jan 12	Tu ↓ Th	No lab meeting this week	
2	Jan 17 ↓ Jan 19	Tu ↓ Th	Introduction to Lab (via Zoom)	Safety issues; introduce group presentations of classic papers; introduce lab reports, discussions of papers, quizzes, lab reports
3	Jan 24 ↓ Jan 26	Tu ↓ Th	Optional lab meeting	Discussion of group presentations
4	Jan 31 ↓ Feb 2	Tu ↓ Th	Group Presentations	Powerpoint (or similar) group presentations discussing classic papers & modern followups
5	Feb 7 ↓ Feb 9	Tu ↓ Th	Discussion of two evolution papers	Be prepared to ask and answer questions. Quizzes 1&2 (10 Q) due 48 hours after end of lab period
6	Feb 14 ↓ Feb 16	Tu ↓ Th	Discussion of two endocrinology papers	Be prepared to ask and answer questions. Quizzes 3&4 (10 Q) due 48 hours after end of lab period
7	Feb 21 ↓ Feb 23	Tu ↓ Th	Cardiology Lab Simulation; Introduction to SimHeart & SimVessel	Quiz 5 (5 Q) due 48 hours after end of lab period
8	Feb 28 ↓ Mar 2	Tu ↓ Th	Introduction to LabScribe cardio-vascular system	Draft of cardiovascular proposal due 48 hours after end of lab period
9	Mar 7 ↓ Mar 9	Tu ↓ Th	Conduct cardiovascular experiments	Lab Report 1 due Monday, March 20, 5:00 pm
10	Mar 14-16	---	<i>Spring Break</i>	-----
11	Mar 21 ↓ Mar 23	Tu ↓ Th	Simulation: Electrical activity in <i>Aplysia</i> & leech	Quiz 6 (5 Q) due 48 hours after end of lab period
12	Mar 28 ↓ Mar 30	Tu ↓ Th	Discussion of Cl <sup>-</sup> current paper; Introduction to SimNeuron & SimNerve	Quiz 7 (5 Q) due 48 hours after end of lab period Draft of SimNeuron or SimNerve proposal due 48 hours after end of lab period
13	Apr 4 ↓ Apr 6	Tu ↓ Th	Conduct nerve experiments	Lab Report 2 due Saturday, April 15, 5:00 pm
14	Apr 11 ↓ Apr 13	Tu ↓ Th	Skeletal Muscle Simulation Introduction to SimMuscle Introduction to LabScribe EMG system	Quiz 8 (5 Q) due 48 hours after end of lab period Draft of SimMuscle proposal due 48 hours after end of lab period
15	Apr 18 ↓ Apr 20	Tu ↓ Th	Conduct muscle experiments	Lab Report 3 due Saturday, April 29, 5:00 pm
16	Apr 25 ↓ Apr 27	Tu ↓ Th	Kidney Function - Urinalysis	

## Goals of the Laboratory

The laboratory is an integral and essential component of the course, with 3 main goals:

1. Give you experience with the processes, tissues, and concepts discussed in the lecture part of the class.
2. Encourage the development of scientific literacy, i.e., the ability to find, read, comprehend, and discuss original research articles from the physiology literature.
3. Deepen your appreciation of the scientific method by requiring you to design, execute, and analyze your own experiments.
4. Develop writing skills in the format of scientific research papers and a lab manual exercise.

## Laboratory Sections

Tue am	11:00-1:50	13284R	Wed pm	2:00-4:50	13286R
Wed am	8:00-10:50	13281R	Thu pm	3:00-5:50	13289R

## Lab Manual

- A laboratory manual will not be required for this class. Handouts describing the lab exercises will be distributed as PDF files via Blackboard.

## Lab Grading (*Details of grading for the lab portion of the class will be announced.*)

- Performance in the lab will account for about 30% of each student's grade. The assignment of lab points is shown on page 5.
- To encourage improved writing, lab reports will be graded strictly, according to a published rubric which was adapted by Dr. Herrera for this course. Grading criteria for lab reports will be published on Blackboard.

## Final Thoughts

- Please forgive the length of this syllabus. We feel it is important for everyone to know exactly what to expect. We hope you will enjoy our mutual exploration of physiology. The mechanisms we will study are fundamentally important in all animals, and highly relevant to the understanding of human health. We promise to apply all of our experience in teaching and research to present an interesting and informative course and to assign grades fairly. Good luck!