COURSE SYLLABUS
Human Physiology – BIPN 100
Fall quarter 2016

Instructor: Catalina Reyes
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Office: H&SS 1145F
Office hours: Monday PM and Friday 3:30-4 PM or by appointment

TED site: ted.ucsd.edu
Announcements, lecture slides and grades will be posted here. PLEASE check on a regular basis

Lecture: Monday, Wednesday and Friday 4:00 – 5:50 PM, HSS 1330

Discussion sessions:

Section C01 – Monday	2:00-2:50 PM	WLH 2206
Section C02 – Monday	3:00-3:50 PM	WLH 2206
Section C03 - Thursday	10:00-10:50 AM	HSS 2154
Section C04 – Wednesday	6:00-6:50 PM	WLH 2206
Section C05 – Friday	1:00-1:50 PM	WLH 2206

Textbook: Human Phsysiology, 7th edition by Dee Silverthorn. The 6th and 5th editions are fine. IMPORTANT – the textbook is not mandatory.

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 have to do the following:

1. Work hard. Go over the material every week; do not try to learn everything the weekend before the exam.
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 have to understand the concepts and physiological processes and learn to critically think about physiology.
3. Read through the power point presentations before each class.
4. Print out the power point outlines and take your own notes on them.
5. Attend every lecture and take notes
6. Attend at least ONE discussion sections per week.

Lectures
You must attend lectures and take notes. Lecture notes will be posted on TED at least 24 hours before each lecture, but essential material will be presented in class that does not appear on web-posted notes. Lectures will be podcasted at podcast.ucsd.edu.

Readings
There are recommended readings from the text for each topic. The text is not required and the exams will only include the material seen in class.

Discussion sections
Sections are very important; you should attend the discussion section you are registered in (notice the schedule for the sections posted on the first page of the syllabus). During the discussion sections you will have the opportunity to discuss lecture material, exams and go over problem sets with your Instructional Assistant (IA). The questions in the problem sets are very similar to the exams questions.

Exams and Grading:
Two midterm exams
Final exam: Tuesday, December 6th, 3 – 6 PM
Clicker questions and participation (option 2 only)

Each midterm exam will be based on material for that section of the course up to the lecture preceding the exam. The final exam will be cumulative. Any questions concerning exams will be addressed during office hours or discussion sections, not by email. Requests for re-grading questions of the exam must be submitted together with the exam as a written request specifying the question and the reason for the re-grade to the Instructional Assistant (IA) who graded the question.
There are no make-up exams. If you miss a midterm exam, you will be required to provide official documentation of an unavoidable emergency. Without the documentation you will receive a failing grade for the exam.

Grading: there are two options for grading.

1. **Exam only option:**
   There will be two midterm exams, each worth 30% of your grade and a final exam, worth 40% of your grade.

2. **Exams and participation (Clickers) option**
   Two midterm exams, each worth 30% of your grade
   Final exam, worth 35% of your grade
   Clickers and participation, worth 5% of your grade. You will receive the full 5% if you answer at least 75% of the questions in 75% of the lectures, the remaining 25% buffer for forgotten clickers, battery failure and missed class.

   To choose option 2 you need to **register** your clicker by the end of Week 1, June 30 and clicker points will automatically be included in your grade. If your clicker is not registered by this date you will automatically be graded on Option 1.

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

Tentative schedule: this is a **tentative** schedule. The students in the classroom will determine the rate at which we can advance during this summer session.

Lecture	Date	Topic	Silverthorn, 6th edition
1	Sept 23	• Introduction, metabolism, membranes, diffusion, osmosis, tonicity	32-47, 130-160, 175-177
2	Sept 26	• Introduction continuation, signal transduction, homeostasis, allostasis, feedback loops	11-18
3	Sept 28	• Resting membrane potential, Ohm's law, Nernst equation, Goldman-Hodgkin-Katz equation	161-166, 248-251
4	Sept 30	• Neuron structure and function, channels	239-245
5	Oct 3	• Action potentials, signal transmission along axons,	251-261
6	Oct 5	• Signal transmission along axons continuation, synaptic transmission	266-273
7	Oct 7	• Synaptic transmission continuation	274-277
8	Oct 10	• Central nervous system components, functional anatomy of the spinal cord, reflex arcs	291-298, 442-451
9	Oct 12	• Functional anatomy of the brain	299-308
10	Oct 14	**Midterm exam 1**	
11	Oct 17	• Sensory physiology, motor pathways	327-340, 391-393, 454-457
12	Oct 19	• Efferent division of the peripheral nervous system	378-393
13	Oct 21	• Endocrinology	207-216
14	Oct 24	• Endocrinology continuation	219-223
15	Oct 26	• Striated skeletal muscle – molecular mechanisms that generate force, contraction-relaxation cycle	400-413
16	Oct 28	• Motor units, mechanics of body movement, fiber types	414-420
17	Oct 31	• Smooth muscle	427-433
18	Nov 2	• Introduction to the cardiovascular system, cardiac anatomy	463-464, 471-479
19	Nov 4	• Cellular cardiac physiology, myogenic contraction, cardiac electrophysiology	483-485
20	Nov 7	• Cardiac electrophysiology, electrocardiogram	486
21	Nov 9	**Midterm exam 2**	
	Nov 11	• NO CLASS	
22	Nov 14	• Cardiac mechanics	487-498
23	Nov 16	• Hemodynamics: systemic and pulmonary circulatory loops, Ohm's law for blood flow	466-471
24	Nov 18	• Hemodynamics: material exchange between blood and tissues	528-533
25	Nov 21	• Regulation of the cardiovascular system: Cardiac output	513-528

		and BP	
26	Nov 23	• Regulation of the cardiovascular system: Cardiac output and BP continuation	
	Nov 25	• NO CLASS	
27	Nov 28	• Body fluid compartments: anatomy and function of the kidneys	627-633
28	Nov 30	• Renal cortex: filtration and reabsorption	634-646
29	Dec 2	• Renal medulla: gradients, water permeability and Vasopressin	644-677
	Dec 6	**Final Exam 3:00-5:50 pm**	

Topic	Silverthorn, 6th edition	Silverthorn, 7th edition
• Introduction, metabolism, membranes, diffusion, osmosis, tonicity	32-47, 130-160, 175-177	53-65, 146-177, 189-192
• Introduction continuation, signal transduction, homeostasis, allostasis, feedback loops	11-18	33-37
• Resting membrane potential, Ohm's law, Nernst equation, Goldman-Hodgkin-Katz equation	161-166, 248-251	177-182, 260-264
• Neuron structure and function, channels	239-245	250-257
• Action potentials, signal transmission along axons,	251-261	266-275
• Signal transmission along axons continuation, synaptic transmission	266-273	277-284
• Synaptic transmission continuation	274-277	285-290
• Central nervous system components, functional anatomy of the spinal cord, reflex arcs	291-298, 442-451	301-307, 442-448
• Functional anatomy of the brain	299-308	309-318
Midterm exam 1		
• Sensory physiology, motor pathways	327-340, 391-393, 454-457	333-344, 395-397, 452-455
• Efferent division of the peripheral nervous system	378-393	383-397
• Endocrinology	207-216	221-230
• Endocrinology continuation	219-223	230-239
• Striated skeletal muscle – molecular mechanisms that generate force, contraction-relaxation cycle	400-413	401-415
• Motor units, mechanics of body movement, fiber types	414-421	416-422
• Smooth muscle	427-433	427-434

• Introduction to the cardiovascular system, cardiac anatomy	463-464, 471-479	460-461, 467-475
• Cellular cardiac physiology, myogenic contraction, cardiac electrophysiology	483-485	478-479
• Cardiac electrophysiology, electrocardiogram	486	481
Midterm exam 2		
• NO CLASS		
• Cardiac mechanics	487-498	485-495
• Hemodynamics: systemic and pulmonary circulatory loops, Ohm's law for blood flow	466-471	463-466
• Hemodynamics: material exchange between blood and tissues	528-533	520-524
• Regulation of the cardiovascular system: Cardiac output and BP	513-528	506-519
• Regulation of the cardiovascular system: Cardiac output and BP continuation		
• NO CLASS		
• Body fluid compartments: anatomy and function of the kidneys	627-633	613-618
• Renal cortex: filtration and reabsorption	634-646	620-630
• Renal medulla: gradients, water permeability and Vasopressin	644-677	631-662