

# **SYSTEMS PHYSIOLOGY (01:146:356)**

Spring 2021 COURSE SYLLABUS

3 credits

## **Instructor**

Cassie Nelson, Ph.D.

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Synchronous Course Meeting Times: Tuesdays and Thursdays 2:00-3:00PM on Zoom via Canvas

Office Hours: Tuesday and Thursdays 12:30-1:30 PM on Zoom via Canvas

Individual appointments: Fridays between 9:00AM and 3:30PM, sign up on Canvas

## **Course Meeting Times**

**The course is offered with both synchronous and asynchronous instruction** and runs from Tuesday January 19<sup>th</sup> through Wednesday May 12<sup>th</sup>.

There are four required, *synchronous* exam days/times and they are as follows:

Exam 1 – Tuesday February 16<sup>th</sup>, 2:00-3:00 PM

Exam 2 – Thursday March 11<sup>th</sup>, 2:00-3:00 PM

Exam 3 – Tuesday April 20<sup>th</sup>, 2:00-3:00 PM

Cumulative Final Exam – TBA

## **Learning Assistants**

Weekly LA study sessions will be available. More information available on Canvas.

## **Course Materials**

Textbook- **Vander's Human Physiology, 15<sup>th</sup> ed.**

By Eric Widmaier, Hershel Raff, Kevin Strang

Publisher: McGraw Hill

McGraw-Hill Connect Access is **NOT REQUIRED**. However, for additional practice and studying, Connect has some excellent resources.

Purchase options: McGraw Hill E-Book, Textbook Rental, Loose-leaf purchase

ISBN-13: 9781259903885

## Learning Goals

By ***actively participating in and interacting with*** this course i.e keeping up with scheduled assignments, undertaking the recommended reading, using additional resources when required such as the learning assistant-organized reviews, my office hours, supplementary study videos and more, you will:

1. Master factual and conceptual knowledge in Systems Physiology that will provide a solid foundation for success in advanced training and professional careers.
2. Develop an ability to summarize, integrate and organize information.
3. Develop your ability to use scientific reasoning to evaluate the potential for current research and new discoveries to improve our understanding of Systems Physiology and its relevance to human health and to our society

## Course Description

This course is an upper-level course and assumes a basic level of familiarity with several key physiological systems. The focus of this course will be to develop the depth of your understanding of key aspects of the following physiological systems: nervous, endocrine, muscular, cardiovascular, respiratory, renal, digestive and reproductive, with a special emphasis on cardiovascular and renal physiology.

## Current Academic Integrity Policy

Please use this link to check your understanding of Rutgers University's academic integrity policy: <http://academicintegrity.rutgers.edu/>

Violations of this policy include but are not necessarily limited to cheating, fabrication, plagiarism, denying others access to information or material, and facilitating violations of academic integrity. At the start of each exam, you will be asked to sign the Honor Pledge: *"On my honor, I pledge that I have neither given nor received any unauthorized aid on this exam."*

## Learning Support

Rutgers University provides various resources to help you be successful in your studies. These include Rutgers RIOT, Searchpath, RefWorks (<http://www.libraries.rutgers.edu/tutorials>), Academic Support Programs: <http://newbrunswick.rutgers.edu/academics/academic-support>

## Exam absences

For unforeseen absences such as the sudden onset of a significant illness on the morning of an exam, you must:

- a) Contact me directly (by my email) within 24 hours after the missed examination
- b) Provide me official documentation to support the reason for your absence
- c) Do a make-up exam (usually administered in an oral format) on the designated make-up day

If you know you will not be able to attend any of the examinations in this course due to religious holidays, significant family events, etc, you must let me know AS SOON AS POSSIBLE so an appropriate makeup can be scheduled. If you do not follow the above procedure, the instructor reserves the right to assign your grade for that exam as a zero.

## Assessments/Grading

Your grade in this class will be based off the following assessments. Each is explained in further detail below.

<b>Exams (3):</b>	<b>45% (15% each)</b>
<b>Cumulative Final Exam (1):</b>	<b>20%</b>
<b>Weekly Quizzes (10):</b>	<b>10%</b>
<b>Concept Checks (23):</b>	<b>10%</b>
<b>Interview Essays (3):</b>	<b>10%</b>
<b>Attendance via Zoom:</b>	<b>5%</b>

Exams: There will be three, 40 question, 60 min exams. Exam questions are mostly multiple choice and are administered through Canvas. Grades are posted to Canvas once the scores are received. A cumulative final exam will be administered on the University-assigned final examination day and time and will be 80 multiple-choice questions in a 2-hour time period.

**\*\* Anyone involved in activities before or during an exam that suggest to the Professor that you are using unfair practices and/or outside information to increase your exam grade will be reported to the Office of Academic Integrity. The instructor reserves the right to assign a student a ZERO if they are caught engaging in unfair practices during exams. Online exams are open book and open note but should be your work and your work only. Proctoring software is not required for exams.**

*Exams will be held during the regular class period (2:00-3:00PM) on the following days: February 16, March 11, April 20*

Weekly Quizzes: Most Sunday nights at 11:59pm, a weekly Canvas quiz is due. These will cover lecture material from the two lectures from that week. They will consist of 10 multiple choice questions designed by the professor and will look more like exam questions (more difficult than concept checks). Students will have 15 minutes to answer

the questions and 1 attempt per quiz. The questions are shuffled from a pool of 15 or more questions. No weekly quizzes will be dropped when calculating the final grade.

Concept Checks: Following each set of two mini-lectures and discussion section, students will need to complete a short, multiple-choice 10 question “concept check,” administered through Canvas quizzes. These are due on Tuesdays and Thursdays at 11:59pm each week of the course, unless otherwise indicated. There is a 30 min time limit and students may take these up to 3 times. I will take the highest score for each quiz. When calculating the final grade, the lowest concept check quiz score will be dropped.

Interview Essays: Posted to Canvas are several interviews that Dr. Nelson has done with professionals in the field of physiology and healthcare. It is highly recommended that students listen to all these interviews to hear the different paths that individuals have taken to a fulfilling career. Three essays will be due throughout the semester with deadlines of February 2<sup>nd</sup>, March 2<sup>nd</sup>, and April 1<sup>st</sup> at 11:59pm. In each essay, students should discuss why one interview was impactful to them. In the final essay due on April 1<sup>st</sup>, students will add a paragraph to reflect where they are in terms of their school/career plans. More information and a rubric is available on Canvas.

Attendance: Attendance will be taken every Tuesday and Thursday on zoom via a poll question at some point during the 2-3pm hour. All students are required to come to class discussions on Tuesday and Thursday as we will be actively working with the material from the lectures covered on the concept check due that evening. Because life, technology, and zoom issues come up, students who have attended 80% of the Tu/Th discussions will receive full credit for attendance (100%). Students who attend fewer than 80% of the meetings will receive that percentage for the attendance grade.

## Tentative Grading Scale

***This is a TENTATIVE grading scale and the instructor reserves the right to make adjustments to this scale.***

A	90.00-100%
B+	85.00-89.99%
B	80.00-84.99%
C+	75.00-79.99%
C	67.00-74.99%
D	60.00-66.99%
F	<60.00%

## Student-Wellness Services & Scarlet Listeners

Just In Case Web App: <http://codu.co/cee05e>

Access helpful mental health information and resources for yourself or a friend in a mental health crisis on your smartphone or tablet and easily contact CAPS or RUPD.

(732) 247-5555 / <http://www.scarletlisteners.com/>

Free and confidential peer counseling and referral hotline, providing a comforting and supportive safe space.

## **Counseling, ADAP & Psychiatric Services (CAPS)**

(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901

[www.rhscaps.rutgers.edu/](http://www.rhscaps.rutgers.edu/)

CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professional within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

## **Violence Prevention & Victim Assistance (VPVA)**

(848) 932-1181 / 3 Bartlett Street, New Brunswick, NJ 08901

[www.vpva.rutgers.edu/](http://www.vpva.rutgers.edu/)

The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

## **Disability Services**

(848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 <https://ods.rutgers.edu/>

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. ***Please share this letter with your instructor and discuss the accommodations with them as early in your courses as possible.*** To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.

## Recommended Weekly Schedule

Monday	Tuesday	Wednesday	Thursday	Friday	Sat	Sunday
Listen to 2 mini lectures on your own time	Attend office hours at 12:30pm (optional) and class discussion at 2pm (required)	Listen to 2 mini lectures on your own time	Attend office hours at 12:30pm (optional) and class discussion at 2pm (required)	Study material from the week, organize/rewrite notes, and take quiz that is due on Sunday	Off Day	Read assigned readings, print out PPTs for next week, start listening to lectures
	<b>Concept Check Due</b>  <b>Attendance required from 2-3pm</b>		<b>Concept Check Due</b>  <b>Attendance required from 2-3pm</b>			<b>Weekly Quiz Due</b>

## Tentative Topical & Assignment Course Schedule

The next two pages highlight topics covered in each class period, required readings, and assignments due throughout the semester. Except for exams, all assignments are due at 11:59pm on the day indicated. All assignments can be found on Canvas under the respective module pages.

Unit	Date	Topic	Readings	Lect	Assessments	
<b>M O D U L E  O N E</b>	Tue Jan 19	Homeostasis Local & Action Potentials	1.3-1.5 6.6, 6.7	1.1 1.2	Concept Check 1.1	
	Thu Jan 21	Chemical Synapses General Senses & Vision	6.8-6.13 7.1, 7.6	1.3 1.4	Concept Check 1.2	
	Sun Jan 24				Quiz 1	
	Tue Jan 26	Other Sensory Systems Neuromuscular Junction	7.7-7.9 9.1	1.5 1.6	Concept Check 1.3	
	Thu Jan 28	Muscle Contraction Muscle Mechanics	9.2 9.3-9.4	1.7 1.8	Concept Check 1.4	
	Sun Jan 31				Quiz 2	
	Tues Feb 2	Fatigue & Fiber Types Smooth & Cardiac Muscle	9.5-9.6 9.8-9.10	1.9 1.10	Concept Check 1.5 <b>Interview Essay #1 Due</b>	
	Thu Feb 4	Intro to Endocrine Pituitary, Thyroid Hormones	11.1-11.7 11.8-11.12	1.11 1.12	Concept Check 1.6	
	Sun Feb 7				Quiz 3	
	Tues Feb 9	Adrenal Hormones Other Hormones	11.13-11.15 11.16-11.22	1.13 1.14	Concept Check 1.7	
	Thu Feb 11	Blood & Blood Flow Hemodynamics	12.1 12.2-12.3	2.1 2.2	Concept Check 2.1	
	Sun Feb 14				Quiz 4	
	<b>Tu Feb 16</b>	<b>Exam 1 @ 2:00 PM</b> <b>Covers Lectures 1-7</b>		<b>Ch 1,6,7,9, 11</b>		<b>Exam 1</b>

M O D U L E  T W O	Thu Feb 18	Cardiac Electrophysiology The EKG	12.4 12.4	2.3 2.4	Concept Check 2.2
	Sun Feb 21				Quiz 5
	Tue Feb 23	The Cardiac Cycle Cardiac Output	12.5 12.6	2.5 2.6	Concept Check 2.3
	Thur Feb 25	Vessels, Blood Pressure Exercise Effects on Heart	12.8-12.12 12.13,12.18	2.7 2.8	Concept Check 2.4
	Sun Feb 28				Quiz 6
	Tue Mar 2	Cardiac Pathologies The Breath Cycle	12.20-12.22 13.1-13.2	2.9 2.10	Concept Check 2.5 <b>Interview Essay #2 Due</b>
	Thu Mar 4	Lung Compliance & Volumes Exchange of O2 and CO2	13.3, 13.4 13.5-13.8	2.11 2.12	Concept Check 2.6
	Sun Mar 7				Quiz 7
	Tue Mar 9	Control of Respiration Exercise & Respiration	13.9 13.9, 13.10	2.13 2.14	Concept Check 2.7
	Thu Mar 11	<b>Exam 2 @ 2:00 PM Covers Lectures 8-14</b>	<b>Ch 12, 13</b>		<b>Exam 2</b>
M O D U L E  T H R E E	Tue Mar 23	Intro to Renal System Glomerular Filtration	14.1-14.2 14.3	3.1 3.2	Concept Check 3.1
	Thu Mar 25	Na and Water Balance Concentrating Urine	14.6-14.7 14.7	3.3 3.4	Concept Check 3.2
	Sun Mar 28				Quiz 8
	Tue Mar 30	Renin Angiotensin System Renal Control of Other Ions	14.8 14.9-14.20	3.5 3.6	Concept Check 3.3
	Thu Apr 1	Digestive Overview Stomach	15.1-15.4 15.5	3.7 3.8	Concept Check 3.4 <b>Interview Essay #3 Due</b>
	Sun Apr 4				Quiz 9
	Tue Apr 6	Small Intestine Physiology Other Organs/ Pathologies	15.6 15.7-15.8	3.9 3.10	Concept Check 3.5
	Thu Apr 8	Reproductive Principles Male Reproduction	17.1-17.4 17.5-17.8	3.11 3.12	Concept Check 3.6
	Sun Apr 11				Quiz 10
	Tue Apr 13	Female Reproduction Pregnancy/Development	17.12-17.15 17.20-17.23	3.13 3.14	Concept Check 3.7
	Thu April 15	No new lectures, review			
	Tue Apr 20	<b>Exam 3 @ 2:00 PM Covers Lectures 15-21</b>	<b>14, 15, 17</b>		<b>Exam 3</b>
	F I N A L  P R E P	Thu Apr 22	Special Topics: Diabetes & Obesity*	16.2,16.5	4.1 4.2
Tue Apr 27		Special Topics: Mental Health, Physical Health & the Gut Biome*	Readings	4.3 4.4	Concept Check 4.2
Thu Apr 29		Special Topics: Gender, Sex, Orgasm*	17 Readings	4.5 4.6	Concept Check 4.3
Sun May 2					Quiz 11
Tue May 4		Optional Review Session			
TBA		<b>Cumulative Final Exam</b>			<b>Final Exam</b>

\*Special topics subject to change if the class would like to learn about something else