

# **SYSTEMS PHYSIOLOGY (01:146:356 Section 02)**

Fall 2021 COURSE SYLLABUS

3 credits

## **Instructor**

Cassie Nelson, Ph.D.

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Synchronous Course Meeting Times: Mondays and Thursdays 9:00-10:20AM on Livingston Campus BRR-1095

Office Hours: Mondays and Thursdays 1:00-2:00PM on Busch Campus (Room TBA)

Individual appointments: See schedule & book on Canvas – On Zoom

## **Course Meeting Times**

**The course is offered with both synchronous and asynchronous instruction** and runs from Thursday September 2<sup>nd</sup> through Thursday December 23<sup>rd</sup>.

There are three exams that will be administered during class time and a cumulative final on the university-assigned day.

Exam 1 – Monday September 27<sup>th</sup>

Exam 2 – Monday October 25<sup>th</sup>

Exam 3 – Thursday December 2<sup>nd</sup>

Cumulative Final Exam – Day/Time 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 (22):</b>	<b>10%</b>
<b>Interview Essays (2):</b>	<b>10%</b>
<b>Attendance:</b>	<b>5%</b>

Exams: There will be three, 40 question, 60 min exams. Exam questions are multiple choice. 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.**

*Exams will be held for the first hour of our regular class period (9:00AM-10:00AM) on the following days: September 27, October 25, and December 2. The cumulative final day and time will be announced when it becomes available.*

Weekly Quizzes: Most Sunday nights at 11:59pm, a weekly Canvas quiz is due. These will cover lecture material from the previous 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. The lowest quiz grade will be dropped when calculating the final grade.

Concept Checks: Following each class period, students will need to complete a short, multiple-choice 10 question “concept check,” administered through Canvas quizzes. These are due on Mondays 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 two concept check quiz scores 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. Two essays will be due throughout the semester with deadlines of October 7<sup>th</sup> and November 4<sup>th</sup> at 11:59pm. In each essay, students should discuss why one interview was impactful to them. In the second essay, students will add a paragraph to reflect where they are in terms of their school/career plans. A more detailed prompt and rubric are available on Canvas.

Attendance: Attendance will be taken during class every day. Because life, traffic, and logistical issues come up, students who have attended 80% of the Mon/Th class periods 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
Attend Class at 9am  Attend office hours at 1pm	Online office hours offered from 11am-12pm	Review/organize material as needed	Attend Class at 9am  Attend Office Hours at 1pm	Review material from the week  Take weekly quiz that's due on Sunday  Online office hours offered from 11am-12pm	Off Day	Print out PPTs & do assigned readings for upcoming week
<b>Concept Check Due</b>  <b>Attendance required from 9-10:20am</b>			<b>Concept Check Due</b>  <b>Attendance required from 9-10:20am</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. Except for exams, all assignments are due at 11:59pm on the day indicated.

Unit	Date	Topic	Readings	Lecture	Assessments
<b>M O D U L E  O N E</b>	Thu Sept 2	Homeostasis Local & Action Potentials	1.3-1.5 6.6, 6.7	1	Concept Check 1.1
	Wed Sept 8 <i>** Monday schedule</i>	Chemical Synapses General Senses & Vision	6.8-6.13 7.1, 7.6	2	Concept Check 1.2
	Thu Sept 9	Other Sensory Systems Neuromuscular Junction	7.7-7.9 9.1	3	Concept Check 1.3
	Sun Sept 12				Quiz 1
	Mon Sep 13	Muscle Contraction Muscle Mechanics	9.2 9.3-9.4	4	Concept Check 1.4
	Thu Sep 16	Fatigue & Fiber Types Smooth & Cardiac Muscle	9.5-9.6 9.8-9.10	5	Concept Check 1.5
	Sun Sept 19				Quiz 2
	Mon Sep 20	Intro to Endocrine Pituitary, Thyroid Hormones	11.1-11.7 11.8-11.12	6	Concept Check 1.6
	Thu Sept 23	Adrenal Hormones Other Hormones	11.13-11.15 11.16-11.22	7	Concept Check 1.7
	Sun Sep 26				Quiz 3
	<b>Mon Sep 27</b>	<b>EXAM 1 @ 11:00AM</b>	<b>Ch 1,6,7,9, 11</b>		<b>Exam 1</b>
<b>M O D U L E  T W O</b>	Thu Sep 30	Blood & Blood Flow Hemodynamics	12.1 12.2-12.3	8	Concept Check 2.1
	Mon Oct 4	Cardiac Electrophysiology The EKG	12.4 12.4	9	Concept Check 2.2
	Thu Oct 7	The Cardiac Cycle Cardiac Output	12.5 12.6	10	Concept Check 2.3  Interview Essay #2 Due
	Sun Oct 10				Quiz 4
	Mon Oct 11	Vessels, Blood Pressure Exercise Effects on Heart	12.8-12.12 12.13,12.18	11	Concept Check 2.4
	Thu Oct 14	Cardiac Pathologies The Breath Cycle	12.20-12.22 13.1-13.2	12	Concept Check 2.5

	Sun Oct 17				Quiz 5
	Mon Oct 18	Lung Compliance & Volumes Exchange of O <sub>2</sub> and CO <sub>2</sub>	13.3, 13.4 13.5-13.8	13	Concept Check 2.6
	Thu Oct 21	Control of Respiration Exercise & Respiration	13.9 13.9, 13.10	14	Concept Check 2.7
	Sun Oct 24				Quiz 6
	<b>Mon Oct 25</b>	<b>Exam 2 @ 11:00AM</b>	<b>Ch 12, 13</b>		<b>Exam 2</b>
<b>M O D U L E  T H R E E</b>	Thu Oct 28	Intro to Renal System Glomerular Filtration	14.1-14.2 14.3	15	Concept Check 3.1
	Mon Nov 1	Na and Water Balance Concentrating Urine	14.6-14.7 14.7	16	Concept Check 3.2
	Thu Nov 4	Renin Angiotensin System Renal Control of Other Ions	14.8 14.9-14.20	17	Concept Check 3.3  Interview Essay #2 Due
	Sun Nov 7				Quiz 7
	Mon Nov 8	Digestive Overview Stomach	15.1-15.4 15.5	18	Concept Check 3.4
	Thu Nov 11	Small Intestine Physiology Other Organs/ Pathologies	15.6 15.7-15.8	19	Concept Check 3.5
	Sun Nov 14				Quiz 8
	Mon Nov 15	Reproductive Principles Male Reproduction	17.1-17.4 17.5-17.8	20	Concept Check 3.6
	Thu Nov 18	Female Reproduction Pregnancy/Development	17.12-17.15 17.20-17.23	21	Concept Check 3.7
	Sun Nov 21				Quiz 9
	<b>F I N A L  P R E P</b>	Mon Nov 22	Special Topics in Physiology: Diabetes	16.2, 16.5	22
<i>Wednesday 11/24-Sunday 11/28 – Thanksgiving Break</i>					
Mon Nov 29		No Classes, Wednesday Schedule			
<b>Thu Dec 2</b>		<b>Exam 3 @ 11:00AM</b>	<b>Ch 14,15,16</b>		<b>Exam 3</b>
Mon Dec 6		Special Topics in Physiology: The Liver	Selections	23	Concept Check 4.1
Thu Dec 9		Special Topics in Physiology: Gut Biome	Selections	24	Concept Check 4.2
Sun Dec 12					Quiz 10
Mon Dec 13	Review Session		25		
<b>Final Exam – TBA (Cumulative)</b>					