

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

Spring 2025 COURSE SYLLABUS

3 credits

## **Instructor**

Grace Amole, MD

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Course Meeting Times & Location: Tuesdays & Fridays, 8:30 am – 9:50 am  
LSH AUD

Office Hours: In Person Office Hours Tuesdays 10:30 am – 11:30 am, Busch Lab  
Fridays 2:15 pm – 3:15 pm, LSH

Zoom Office Hours Mondays 11:00 am - 12:00pm  
Thursdays 11:00 am - 12:00pm  
Zoom link available on Canvas

Individual appointments: By appointment, email to inquire.

## **Course Meeting Times**

**The course is IN-PERSON, with synchronous instruction** and runs from Tuesday, January 21<sup>st</sup> through Tuesday, May 13<sup>th</sup>.

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

Exam 1 – Tuesday, February 18<sup>th</sup>

Exam 2 – Friday, March 28<sup>th</sup>

Exam 3 – Tuesday, April 29<sup>th</sup>

Cumulative Final Exam – Friday, May 9<sup>th</sup>

## **Learning Assistants**

Weekly LA study sessions will be available. See Canvas for more information.

## **Course Materials**

Textbook- **Vander's Human Physiology, 16<sup>th</sup> ed.**

By Eric Widmaier, Hershel Raff, Kevin Strang

Publisher: McGraw Hill

Our course is enrolled in McGraw Hill's FIRST DAY program, which means that you have access to the textbook and Connect within Canvas as you click on a Connect assignment. The \$82.43 discounted price is charged to your student fee account. Since

Connect assignments are part of the course, the textbook + Connect access is required. If you would like an optional looseleaf copy of the textbook, a discounted price is available through Connect.

## 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 email) BEFORE, but no later than 24 hours after the missed examination.
- b) Provide me official documentation to support the reason for your absence

c) Do a make-up exam on the designated make-up day (usually in oral format)  
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.

Exam days are not optional. They are important days in the course that need to be prioritized above work schedules. Make-up exams will only be given to students who provide a documented, legitimate reason for not being at the regularly scheduled exam.

## 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>51% (17% each)</b>
<b>Cumulative Final Exam (1):</b>	<b>20%</b>
<b>Weekly Quizzes (10):</b>	<b>8%</b>
<b>Concept Checks (21):</b>	<b>6%</b>
<b>Connect Pre-Lecture Assignments (21):</b>	<b>5%</b>
<b>Discussion Posts (2)</b>	<b>5%</b>
<b>Attendance (~12):</b>	<b>5%</b>

Exams: There will be three, 40 question, 80-minute 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 during our regular class period on the following days: February 18th, March 28<sup>th</sup>, and April 29<sup>th</sup>.*

***The cumulative final is on Friday, May 9<sup>th</sup> from 9-11AM.***

Weekly Quizzes: Most Monday 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.

Pre-Lecture Connect Assignments (PL): Prior to each lecture, a short, active reading assignment administered in McGraw Hill Connect is due by 8:30AM on Mondays and Thursdays. The purpose of these assignments is to familiarize students with the vocabulary and content that will be discussed that day. The assignments are intended

to help students purposefully read the textbook. Assignments are graded on completion, not accuracy, and the lowest two will be dropped when calculating the final grade.

Concept Checks (CC): 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 grade the highest score for each quiz. When calculating the final grade, the lowest two concept check quiz scores will be dropped.

Discussion Posts: Posted to Canvas are two discussion posts related to the course. Discussion post (one page each) will be due throughout the semester with deadlines of February 2<sup>nd</sup> and May 9<sup>th</sup>. In each submission, students should discuss the discussion posts while following the rubric criteria. You must also respond to at least two of your peers by providing detailed information (e.g. clinical reasoning, the case history, etc.). A more detailed prompt and rubric are available on Canvas.

Attendance: **Attendance will be taken** at random, in approximately 12-14 class sessions.

## **Late Work**

All assignments are available to you well ahead of time; therefore, late work is not accepted. Be proactive and do assignments early.

## **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
Zoom office hours 2-3pm	Lecture 12:10-1:30pm  In person office hours after class, appx 1:45-2:45pm		Zoom office hours, 1-2pm	Lecture 12:10-1:30pm  In person office hours before class, 10:20-11:40am		Print out PPTs & check out assigned readings for next week

<b>Weekly Quiz Due at 11:59pm (covers material from previous week)</b>	<b>Attendance required from 12:10-1:30pm</b>			<b>Attendance required from 12:10-1:30pm</b>		
	<b>Pre-lecture reading due at 12:10pm</b>			<b>Pre-lecture reading due at 12:10pm</b>		
	<b>Concept Check Due at 11:59pm</b>			<b>Concept Check Due at 11:59pm</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		Topic	Readings	Lecture	Assessments
<b>MODULE ONE</b>	Tue Jan 21	Homeostasis Local/Action Potentials	1.3-1.5 6.6, 6.7	1	PL 1.1 CC 1.1
	Fri Jan 24	Chemical Synapses Drugs & Synapses	6.8-6.13	2	PL 1.2 CC 1.2
	Mon Jan 27				Quiz 1 - Neuro
	Tue Jan 28	Osmosis, Neuromuscular Junction, Muscle Contraction	4.3 9.1-9.2	3	PL 1.3 CC1.3
	Fri Jan 31	Physiology of the Brain (1)	9.2 8	4	PL 1.4
	Sun Feb 2				Discussion Post #1 Due
	Mon Feb 3				Quiz 2 - Osmosis & Muscle
	Tue Feb 4	Physiology of the Brain (2)	8	5	PL 1.5 CC 1.4
	Fri Feb 7	Intro to Endocrine Pituitary, Thyroid Hormones	11.1-11.7 11.8-11.12	6	PL 1.6 CC 1.5
	Mon Feb 10				Quiz 3 – Muscle & Endocrine
	Tue Feb 11	Adrenal Hormones Pancreatic Hormones	11.13-11.15 16.2	7	PL 1.7 CC 1.6
	Fri Feb 14	Calcium Homeostasis Exam 1 Review	11.16-11.22	8	CC 1.7
	<b>Tues Feb 18</b>	<b>EXAM 1 Covering Ch 1,4,6,8,9,11,16</b>			<b>Exam 1</b>
	Fri Feb 21	Blood & Blood Flow	12.1	9	PL 2.1

<b>M O D U L E  T W O</b>		Hemodynamics	12.2-12.3		CC 2.1	
	Tue Feb 24	Cardiac Electrophysiology The EKG	12.4 12.4	10	PL 2.2 CC 2.2	
	Fri Feb 28	The Cardiac Cycle Cardiac Output	12.5 12.6	11	PL 2.3 CC 2.3	
	Mon Mar 3				Quiz 4 – Cardio I	
	Tue Mar 4	Vessels, Blood Pressure Exercise & Heart	12.8-12.12 12.13,12.18	12	PL 2.4 CC 2.4	
	Fri Mar 7	Cardiac Pathologies The Breath Cycle	12.20-12.22 13.1-13.2	13	PL 2.5 CC 2.5	
	Sun Mar 9			Discussion Post #2 Due		
	Mon Mar 10			Quiz 5 – Cardio II		
	Tue Mar 11	Lung Compliance & Volumes Exchange of O <sub>2</sub> and CO <sub>2</sub>	13.3, 13.4 13.5-13.8	14	PL 2.6 CC 2.6	
	Fri Mar 14	Control of Respiration Exercise & Respiration	13.9 13.9, 13.10	15	PL 2.7 CC 2.7	
		<b>SPRING</b>	<b>BREAK</b>	<b>03/17</b>	<b>03/24</b>	
	Mon Mar 24			Quiz 6 - Respiratory		
	Tue Mar 25	Clinical Respiration Exam 2 Review		16		
	<b>Fri Mar 28</b>	<b>Exam 2 Covering Ch 12 and 13</b>			<b>Exam 2</b>	
<b>M O D U L E  T H R E E</b>	Tue Mar 31	Intro to Renal System Glomerular Filtration	14.1-14.2 14.3	17	PL 3.1 CC 3.1	
	Fri Apr 4	Na and Water Balance Concentrating Urine	14.6-14.7 14.7	18	PL 3.2 CC 3.2	
	Mon Apr 7				Quiz 7 - Renal	
	Tue Apr 8	Renin Angiotensin System Renal Control of K <sup>+</sup> , H <sup>+</sup>	14.8 14.9-14.20	19	PL 3.3 CC 3.3	
	Fri Apr 11	Digestive Overview Stomach & Accessory Organs	15.1-15.4 15.5	20	PL 3.4 CC 3.4	
	Mon Apr 14			Quiz 8 – Renal & Digest		
	Tue Apr 15	Small Intestine Physiology Other Organs/ Pathologies	15.6 15.7-15.8	21	PL 3.5 CC 3.5	
	Fri Apr 18	Reproductive Principles Male Reproduction	17.1-17.4 17.5-17.8	22	PL 3.6 CC 3.6	
	Mon Apr 21				Quiz 9 - Repro	
	Tue Apr 22	Female Reproduction Pregnancy/Development	17.12-17.15 17.20-17.23	23	PL 3.7 CC 3.7	
	Fri Apr 25	Misc Topics Reproduction Exam 3 Review		24		
	<b>Tue Apr 29</b>	<b>Exam 3 Covering Ch 14,15,17</b>			<b>Exam 3</b>	
	<b>F I N A L</b>	Fri May 2	Final Exam Review Day		25	
		Fri May 9	<b>FINAL EXAM</b>			
<i>Final exam will be from 9:00-11:00AM on Friday 05/09 in LSH AUD.</i>						