COURSE NAME; NUMBER; SEMESTER; MEETING DAYS, TIMES, AND PLACE.
Integrative Physiology
11:067:300 Fall 2020
Lecture: Tuesday/Thursday @ 2:15–3:35 PM
Recitation: Mondays @ 12:35–1:55 PM
This course will be **synchronous remote** (via Cisco Webex), students will be expected to login to the Canvas site at the schedule time. Recorded materials will be available within 24 h after the scheduled synchronous lecture.

CONTACT INFORMATION
Instructors:
Nicholas T. Bello, PhD (Course Coordinator)
Office Location: Bartlett 121
Phone: 848-932-2966 Email: ntbello@rutgers.edu
Office Hours: By appointment

Anna Hausmann, DVM (Laboratory)
Office Location: Bartlett 213D
Phone: 848-932-9240 Email: anna.hausmann@rutgers.edu
Office Hours: By appointment or via Cisco Webex Tuesdays 11:30AM-1:00pm (link under Canvas Module entitled "Recitation (Monday) Laboratory Lectures")

COURSE WEBSITE, RESOURCES AND MATERIALS
Website: Rutgers Canvas (https://canvas.rutgers.edu/)

Text and Module:
- Lecture: Derrickson B, *Human Physiology*, 2nd edition (eText) through Rutgers Canvas
- Laboratory: PowerPhys (module accompanying Derrickson B, *Human Physiology* through Rutgers Canvas

COURSE DESCRIPTION:
This is a lecture-based physiology course. It covers topics in cellular and molecular physiology and challenges the student to problem-solve to understand the integration of bodily functions. The objective of the course is to construct a comprehensive approach to the body, its system, and the many processes that keep the systems functioning. Additional instruction is given through assigned lab reports, which are due **before** and reviewed during recitation sessions. Students requiring further assistance can visit the instructor during his office hours.
Prerequisites: *General Biology* 01:119:101,102 and *General Chemistry* 01:160:161,162, 171.

LEARNING GOALS
Program Learning Goals – See https://animalsciences.rutgers.edu/undergraduate/mission.html for the program learning goals (PLGs).

Course Learning Goals
By the end of this course, you will have become familiar with the basic principles of physiology, including concepts related to homeostasis and control of integrative systems. During the course, the students will:

1. Develop a thorough understanding of the principle of homeostasis and controls of mammalian physiology. (PLG 2 & 3)
   Assessment: Four exams, weekly quizzes, and lab assignments.
2. Develop a basic understanding of skeletal and cardiac muscle physiology and regulator controls. (PLG 2 & 3)
   Assessment: Exams, quizzes, and lab assignments will consist of questions that involve critical thinking.
3. Understand the autonomic nervous system regulation of homeostasis and response to physiological challenges. (PLG 2 & 3)
   Assessment: Exams, quizzes, and lab assignments will focus on these topics.

4. Understand the central nervous system, cardiac, and renal regulation of fluid balance and blood pressure control. (PLG 2 &3)
   Assessment: Exams, quizzes, and lab assignments will focus on these topics.
5. Critically apply physiological concepts to understand and interpret basic laboratory findings and critically think. (PLG 2, 3)
   Assessment: Exams, quizzes, and lab assignments will focus on these topics.

ASSIGNMENTS/RESPONSIBILITIES

Lecture: Concepts will be covered in a lecture/discussion format, reinforced by the student′s independent reading and laboratory simulations. Five lecture exams will be given, falling at the conclusion of a unit of material. However, each exam is cumulative. Exams will draw from both lectures and the text, and emphasize understanding and interpretation of the material. The format of the exams will be multiple choice. Tentative exam dates are shown on the course outline (below). Each exam will count for 15% of your final grade of the class and will be available online. There are no makeup exams. Exam-date conflict are to be discussed with the instructor before the scheduled date. In addition, a request for rescheduling an exam will be sent to the Dean of Students, Dr. Michelle Jefferson (jeffermi@echo.rutgers.edu) for review. Failure to do so will result in a grade of "F" for any missed exam.

Recitation: Weekly laboratory assignments and important topics will be reviewed during recitation. Laboratory reports will be submitted through the Canvas site (see below) before the start of class. *No late lab reports will be accepted, no exceptions. The lowest laboratory report grade will be dropped*. A quiz will be administered during each recitation on weeks when there are no exams. Quiz material will be material from the preceding weeks' recitation and laboratory assignment to emphasize important physiological concepts. The format of the quizzes will be multiple-choice, short-answer, essay, and critical-thinking questions. There are no makeup quizzes. Potential conflicts are to be discussed with the instructor before the scheduled date. Failure to do so will result in a grade of "F" for any missed quiz. *The lowest quiz grades will be dropped. The average of 8 recitation quiz grades will count for 10% of your final grade of the class*.

Grading Policy: Science courses at Rutgers integrate scientific content with mathematical, written, and oral skills, problem solving, and critical thinking. Assessment of these skills includes lecture exams and recitation quizzes.

Grades will be calculated as follows:

5 Lecture exams	75%
Average quiz grade	10%
Laboratory reports	15%
	100%

Letter Grades: **A** = 90% or above, **B+** = 85–89%, **B** = 80–84%, **C+** = 75–79%, **C** = 70–74%, **D** = 60–69%, **F** = less than 60%

How to Position Yourself for Academic Success

Tips for improving your chances for success in Integrative Physiology:

1. Virtually come to Lecture and Recitation – People learn in many ways, some are auditory learners, some visual learners, some tactile, but most of us use a combination of all of these, which I will try to do in class as well. Hence, attending lecture and lab increases your opportunities for learning.
2. Note-taking Techniques – Taking notes in class in outline form and leaving space on the page to 'fill in' from the text is highly recommended. Reading over your notes within 24 hours after class and supplementing with more detail from the text will greatly enhance your retention of the material. I would suggest taking lecture notes in one color and using contrasting color for 'added' material.
3. Keep up with the material – Learn the vocabulary and study them regularly. Do not wait until the day before the exam to find out you do not understand something. There is sometimes a tendency to go into a studying slump after mid semester. Just like in a race, do not let up until the finish line and try to save your best kick for the end of the race!

4. Read the text – Lectures will not always cover all the material, so your text is an important resource. Focus on the summary charts, bold or highlighted items, and end-of-chapter reviews. Supplement your lecture notes with points from your readings. The text provides a wealth of visual illustrations and additional web-based resources. Utilize all these resources to help you learn.
5. Do your laboratory report – You can expect to see question similar to your lab report appear on the quizzes and exam.
6. Form study groups – Study groups can help you learn while making new friends. Often students can learn as much from their peers as from the professor. When you can explain a concept to someone else then you know that you really know it!
7. Ask for help – Students ARE NOT an interruption from my work, but the reason for it. Visit me during office hours or make an appointment. Sometimes that extra bit of explanation makes all the difference.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Please follow the procedures outlined at https://ods.rutgers.edu/students/registration-form. Full policies and procedures are at https://ods.rutgers.edu/

ABSENCE POLICY

Students are expected to attend all classes via Cisco Webex; if you expect to miss one or two classes, please use the University absence reporting website https://sims.rutgers.edu/ssra/ to indicate the date and reason for your absence. An email is automatically sent to me.

Successful completion of the course objectives will be extremely unlikely without excellent attendance. Students are expected to attend ALL classes except in cases of emergency (e.g., illness, death in family), religious holidays (observance of which requires restriction of daily activity), or participation in an official college function (e.g., field trips). In these cases, notification or verification is requested. In the case of absence for special reasons other than those already mentioned, it is the student's responsibility to confer with the instructor about whether the absence is considered excused. When determining whether an absence is excused, the instructor may require such evidence as seems appropriate. As such, attendance is mandatory. If you do miss class, it is your responsibility to catch up with work missed.

COURSE SCHEDULE: ***Found at end of syllabus (after "Student Wellness Services")***

NOTE: Any changes to the following Course Outline will be announced in class and Canvas with ample time for necessary adjustments in preparation and study.

FINAL EXAM DATE AND TIME

Sometime during December 15-22, 2020

ACADEMIC INTEGRITY

The university's policy on Academic Integrity is available at http://academicintegrity.rutgers.edu/academic-integrity-policy. The principles of academic integrity require that a student:

- properly acknowledge and cite all use of the ideas, results, or words of others.
- properly acknowledge all contributors to a given piece of work.
- make sure that all work submitted as his or her own in a course or other academic activity is produced without the aid of impermissible materials or impermissible collaboration.
- obtain all data or results by ethical means and report them accurately without suppressing any results inconsistent with his or her interpretation or conclusions.
- treat all other students in an ethical manner, respecting their integrity and right to pursue their educational goals without interference. This requires that a student neither facilitate academic dishonesty by others nor obstruct their academic progress.
- uphold the canons of the ethical or professional code of the profession for which he or she is preparing.

Adherence to these principles is necessary in order to ensure that

- everyone is given proper credit for his or her ideas, words, results, and other scholarly accomplishments.
- all student work is fairly evaluated and no student has an inappropriate advantage over others.
- the academic and ethical development of all students is fostered.
- the reputation of the University for integrity in its teaching, research, and scholarship is maintained and enhanced.

Failure to uphold these principles of academic integrity threatens both the reputation of the University and the value of the degrees awarded to its students. Every member of the University community therefore bears a responsibility for ensuring that the highest standards of academic integrity are upheld.

STUDENT WELLNESS SERVICES

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.

Counseling, ADAP & Psychiatric Services (CAPS)
(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901/ 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/
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 instructors 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.

Scarlet Listeners
(732) 247-5555 / http://www.scarletlisteners.com/
Free and confidential peer counseling and referral hotline, providing a comforting and supportive safe space.

Fall 2020 Lecture & Examination schedule

WEEK	Recitation Monday (Hausmann)	Dates	Lecture Topics (Bello)	Reading *Derrrickson* (text)
1.	No Class (8/31)	T 9/1	Introduction to Physiology, Chemical Composition of the Body, Cells	Chapters 1-3
		TH 9/3		
2.	Labor Day (9/7)	T 9/8	Metabolism, Transport Across Membrane, Cell Signaling	Chapters 4-6
		TH 9/10		
3.	Quiz 1 Lab Report #1 (9/14)	T 9/15	Exam Review (Chapters 1-6), The Nervous System and Neuronal Excitability,	Chapters 7
		TH 9/17		
4.	**Exam 1 (Chapters 1-6) (9/21)**	T 9/22	The Central Nervous System, Sensory Systems	Chapters 8 & 9
		TH 9/24		
5.	Quiz 2 Lab Report #2 (9/28)	T 9/29	Autonomic & Somatic Nervous System, Muscle	Chapter 10 & 11
		TH 10/1		
6.	Quiz 3 Lab Report #3 (10/5)	T 10/6	Control of Body Movement, Exam Review (Chapters 7-12)	Chapters 12
		TH 10/8		
7.	**Exam 2 (Chapters 7-12) (10/12)**	T 10/13	The Endocrine System, The Cardiovascular System: The Heart	Chapters 13 & 14
		TH 10/15		
8.	Quiz 4 Lab Report #4 (10/19)	T 10/20	The Cardiovascular System: Blood Vessels and Hemodynamics, The Cardiovascular System: The Blood	Chapters 15 & 16
		TH 10/22		
9.	Quiz 5 Lab Report #5 (10/26)	T 10/27	The Immune System, Exam Review (Chapters 13-17)	Chapters 17
		TH 10/29		
10.	**Exam 3 (Chapters 13-17) (11/2)**	T 11/3	The Respiratory System, The Urinary System	Chapters 18 & 19
		TH 11/5		
11.	Quiz 6 Lab Report #6 (11/9)	T 11/10	Fluid, Electrolyte, and Acid-Base Homeostasis,	Chapter 20
		TH 11/12		
12.	Quiz 7 Lab Report #7 (11/16)	T 11/17	Exam Review (Chapters 18-20), The Digestive System	Chapter 21
		TH 11/19		
13.	**Exam 4 (Chapters 18-20) (11/23)**	T 11/24	**Happy Thanksgiving**	
		TH 11/26		
14.	Quiz 8 Lab Report #8 (11/30)	T 12/1	Metabolic Adaptations, Energy Balance, and Temperature Regulation, The Reproductive Systems	Chapters 22 & 23
		TH 12/3		
15.	Quiz 9 Lab Report #9 (12/7)	T 12/8	Exam Review (Chapters 21-23)	
		TH 12/10		

Exam 5 (Chapters 21-23) during Finals Week December 15- 22

Weekly Lab Report Assignments (Due at 12:35PM) (Hausmann)

WEEK	Due Dates	Lab Topics	Simulations
1.	9/3	**Introduction to lab**	Overview of simulations and lab reports
3.	9/14	**Lab Report #1**: Enzyme Activity	Chap 4: PowerPhys: Enzyme Activity
5.	9/28	**Lab Report #2**: Action Potentials	Chap 7: PowerPhys: Action Potentials
6.	10/5	**Lab Report #3**: Recruitment and Isotonic and Isomeric Contractions	Chap 11: PowerPhys: Recruitment and Isotonic and Isomeric Contractions
8.	10/19	**Lab Report #4**: Twitch Contractions and Summation	Chap 11: PowerPhys: Twitch Contractions and Summation
9.	10/26	**Lab Report #5**: Homeostatic Imbalances of Thyroid Function	Chap 13: PowerPhys: Homeostatic Imbalances of Thyroid Function
11.	11/9	**Lab Report #6**: Hematocrit and Hemoglobin Concentration and Blood Typing	Chap 16: PowerPhys: Hematocrit and Hemoglobin Concentration and Blood Typing
12.	11/16	**Lab Report #7**: Respiratory Volumes	Chap 18: PowerPhys: Respiratory Volumes
14.	11/30	**Lab Report #8**: Influence of Fluid Intake on Urine Formation	Chap 19: PowerPhys: Influence of Fluid Intake on
15.	12/7	**Lab Report #9**: Blood Glucose Regulation	Chap 21: PowerPhys: Blood Glucose Regulation